GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

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STRAY STRAWS FROM DR C. C. MILLER

THE FAULTLESS SPRAYER is just the thing in a window of house-plants — wouldn't do without one for $5.00.

NOW'S A GOOD TIME to remember that there's no better place to keep combs on which bees have died than under strong colonies, putting a whole story of them under.

"IN THIS LOCALITY," as soon as a colony is conscious of its queenlessness all that's necessary is to take two frames of brood with adhering bees, and a sealed queen-cell, and enough bees will stay put for a good nucleus.

"A COLONY can usually be crowded into one story late in the fall or about the time the bees are put in the cellar," says the editor, p. 271. You may make that even stronger, and say always. Even if they should hang out at first, no harm.

IN TRANSFERRING from one movable-frame hive to another, the editor says he would both drive and lift out old frames. Must be some mistake. You'd hardly drive if you could lift out the frames, would you? [You are right. I must have had somehow in my mind the old box hive when I spoke about "driving."—ED.]

I ALWAYS SUPPOSED that I got excellent queens by doing as W. W. Somerford directs, p. 260, but some insist that Mr. Somerford will have to destroy those cells and give other brood to the colony if he wants good queens. Friend Somerford, have you ever reared many queens that way? and if so, will you tell us their character?

IN ANSWER to a question, p. 254, most certainly introducing a young queen in place of an older one, before harvest, lessens the chance of swarming; and, more than that, if the young queen is not introduced *but reared* in the hive, there is no danger of swarming. Why a queen reared in the hive is better to prevent swarming than one of the same age introduced, I don't know.

WHAT DOES H. Segelken mean by tall wide sections, which he speaks of twice, p. 263? He prefers sections with a width of 3⅝ and 4 inches. Does he call them *wide?* [I suspect that, when Mr. Segelken spoke of "tall and wide" he simply meant tall sections, from the fact that he directly favors *all* tall sections, no matter what their width.—ED.]

"FUNCTIONALLY the worker-bee is not capable of reproducing its kind"—hold on, though; what about a laying worker? If he lays eggs, and his eggs produce perfect drones, is he to have no credit for his work? But if you're willing to call it *it*, it will be all right. [But is it not still true that a worker bee can not produce its own kind? However, I am willing to call it *it*.—ED.]

STENOG doesn't know what Mr. Day went west for, when Mr. Secor says:

> May the strength which I gather while Day's in the West.

Day was trying to get away from the two damsels that were after him, Evening and Twilight, for we are told, "Now came still Evening on, and Twilight." [You are right. —ED.]

W. W. SOMERFORD, p. 261, speaks of making nuclei of brood and bees that have been ten days queenless; and unless the bees are fastened in, "nine-tenths of the bees return to the old hive." In this locality not many such queenless bees would return to the old locality, if not fastened in at all. [I suspect you are right, and yet at the same time Doolittle may have a bone to pick with you on the point.—ED.]

A. E. MANUM reports in *A. B. K.* that in 1886 he fed to 727 colonies $2100 worth of sugar. If sugar was 5 cts. a pound, and 5 pounds of sugar made 7 pounds of syrup, that made 80 pounds of syrup per colony. Seems there must be an extra cipher in that $2100, but it's so given in two places. [Something wrong somewhere. Even if we take off a cipher, then each individual colony would have got only a scant feed.—ED.]

WHILE BEES BURIED in the snow may do nicely, as mentioned by I. S. Tilt, p. 274, it should not be forgotten that others, I think

G. M. Doolittle among the number, have reported heavy loss when bees were deeply buried a long time. [But the reports for the past few years seem to indicate that, as a general rule, snow over the entrances does very little harm; in fact, it seems to be an advantage. In Doolittle's locality the snow might be so very deep around the hives as to be too much of a good thing.—Ed.]

Dzierzon thinks the queen does not decide the sex of an egg after she thrusts her abdomen in the cell, as by that time he thinks the egg has passed the point where it is fertilized. He inclines to the belief that the sex is decided at the time the queen puts her head in the cell. [We can speculate a good deal on the precise time when the queen decides to lay a worker or a drone egg; but we shall never be able to prove it, methinks. Even if Dr. Dzierzon were right, I do not see how he could prove the theory.—Ed.]

A new kink that of Chas. Dadant, p. 258, that queens drop eggs as they ripen, and so lay as many in a small hive as a large one. May keep right on for a little while when changed from a full colony to a nucleus, but won't they slack up in a day or so? But I don't see that that makes any difference, and I don't see that that overworking and dying theory counts for any thing. Unless I'm entirely mistaken, the rule is that all queens in strong colonies are superseded, and that supersedure usually takes place toward the close of harvest, when it causes no loss, so it's just as well if a queen doesn't last more than a year.

J. H. Martin suggests coffin-handles for hives, p. 256. Don't you know, Bro. Martin, those things are not strong enough for use generally, but only for show? I've taken your advice, refusing "that pugnose affair," and have ordered a hundred hives with substantial cleats clear across. But say, Rambler, what makes you keep harping on handholes that really advanced bee-keepers are finding out are not sufficient? [Handholes are all right; and the handhole in connection with the so-called "pugnose affair" is better than cleats alone. Didn't we so decide, doctor, when we were in your apiary last fall, talking about this same matter?—Ed.]

You missed the first part of my question about that Michigan law, Mr. Editor, p. 254. On the face of it, the law can easily be interpreted that the governor shall not make any appointment until the bee-keepers recommend him to make an appointment, and then he may appoint a man of his own selection that the bee-keepers don't want. Very likely the intention was that the governor should appoint an inspector, and that the appointee must be a man recommended by the bee-keepers. Why not say so? [While the law might have been worded a little better technically, I hardly think the governor would make a choice that would not be in entire harmony with the wishes of the bee-keepers. If such a law were in force, and the bee-keepers as a body were to make a request for the appointment of a certain person, the governor would be, on political grounds if nothing more, very glad to appoint that very person. If the bill could be changed without interfering with its passage, by all means change it. But if there is the least chance that the effort to change would hinder or block its passage, then I would leave it as it is. As to section 3, part of the inspector's duties are enumerated in section 2.—Ed.]

If Apis dorsata is "incapable of being hived," and yet thrives and multiplies to such an extent as to use a large part of the nectar that should go into our hives, can't you "see even then that they can do any harm"? But I've no fear of their living "in this locality." [If *Apis dorsata* were very numerous in their own habitat, there might be grounds to fear that, when they once get into this country, they might run out other bees as the English sparrows have been said to run out some of our song birds. The facts are, that *Apis dorsata* do not interfere with other East India bees in India any more than bumble-bees interfere with *Apis mellifica* in this country. The climate of the United States, even in Florida, would be too severe for the bees at times, if domiciled in the open air. One frost, I imagine, would kill them.—Ed.]

"Don't talk to me," says surly Drone,
"About your 'April showers;'
This sleet and drip give me the grip,
And that my temper sours."

AMERICAN BEE JOURNAL.

I am glad Mr. York reads the *Inland Printer*. No wonder his paper looks well. That's where you'll see my effusions, Bro. York.

Prof. Cook lays stress on the importance of having empty combs on hand to secure a good crop when it does come. He predicts a big crop in 1900.

Mr. York discusses the question as to when a discussion should be cut off. When it ceases to discuss would be a good place to draw the line; that is, when no more juice can be squeezed out of the lemon, throw it away.

As to the number of people making hives, I believe it was five times larger fourteen years ago than now. We used to describe the catalogs of such, and I know the supply was constant. In one issue I wrote up about sixty.

"Afterthought," in the issue for Mar. 30, is the distinctive feature. In one item the writer is severe regarding a proposed trial of how much a man can eat in a certain time. It is claimed that a certain man can eat a pound and a half of honey in a minute and a half. Isn't that a perversion of one's powers?

Prof. Cook paints a sorry picture of the California prospects for 1899; but the late rainfall has spoiled his article, much to his delight, probably. A slight change of Cowper fits the case :

Ye fearful saints, fresh courage take ;
The sky that long was red
Is dark with rain clouds that now burst
In fatness overhead.

The Illinois foul-brood bill will probably become a law, as it was reported to the Senate with the recommendation that it pass. It seems strange that so reasonable a measure as that and others do not emanate from our lawmakers themselves. Why should they be urged in such a matter, while others of a doubtful and even evil character are sometimes granted at once?

T. F. BINGHAM, of smoker fame, is an advocate of wide and deep entrances, summer and winter. He writes that his bees have wintered nicely, notwithstanding his entrances are 12×⅞ high the year round. Wide entrances are rapidly working their way into favor, because it becomes evident that many of the veterans have been using such entrances for years — long before we began to advocate them.

"Alright" is referred to as being possibly a new word. That's alwrong. Poor spellers often use it, supposing it follows the analogy of *already*. It is an eyesore to have such things thrust before us. But it is no worse than *sometime* as a word ; as, "He was here *sometime* ago." *Sometimes* (an adverb) is always one word ; but *some time* is an adjective and a noun. *Sometime* is obsolete. It used to mean *former* or *formerly;* as, "Monroe was *sometime* (once) president of this country." Also *someone*, *noone*, and *anyone*, in place of *somebody*, *nobody*, and *anybody*, are gross blunders. If used they should be separate words.

Mr. Secor says there is $275 in sight for the Langstroth fund. That's a small sum indeed for that purpose. If the papers of Dayton could be informed of the great benefit conferred on the world by Mr. Langstroth, I believe they would gladly help swell the present sum to ten times what it now is. Mr. Secor is the man to broach the subject. People build finer monuments in honor of the dead a century after the death occurs than the contemporary generation would erect. Boston has a superb monument, I am told, in memory of Wm. Lloyd Garrison, but he was mobbed there in 1835, as a kind o' starter, I suppose. It takes time to measure a man.

Ten cities strove for Homer dead,
Through which the living Homer begged his bread.

THE BUSY BEE.

Concerning wintering, Mr. Abbott says he had another chance to test his pet theory, "plenty of food in the right place," this winter. He started a colony into the winter with no honey, but with a large sugar cake directly over the cluster, and when they last reported a few days ago, they were in fine condition. He lost only one colony, and they starved from pure neglect. His bees are on the summer stand, with no protection, and he is now thoroughly convinced that a c'uster of bees with full honey-sacs will not freeze.

In regard to amalgamation, the editor says that General Manager Newman, of the National, in a letter to General Manager Secor, of the U. S. Association, makes such demands as a condition of the union as are never likely to be assented to by the General Manager and directors of the United States Bee-keepers' Association, and there the matter rests. Mr. Abbott says that, as a director of the last-named society, the union will never take place by his consent on the conditions set forth by General Manager Newman.

AMERICAN BEE-KEEPER.

Henry Alley seems to be down on new things, and on some things that are not so new. He says, "Down with a hive, a smoker, a section-case, and all other clap-trap fixtures. Give me things most convenient and inexpensive. Scientific bee-keeping in any branch of apiculture is a nuisance." Bro. Alley seems to want "liberty or death," but prefers the former.

Mr. Doolittle says a wooden paddle about 5×7 inches is the thing to kill cross bees that follow one around the yard. He once tried a paddle made of fine wire cloth stretched over a wooden frame, something like a sieve. But he says he can hit a bee just as well with the solid paddle as with one that allows the air to pass through. The latter sometimes only stuns the bee, while the solid one always kills it.

A correspondent asks Mr. Hill how a glass hive would work. The reply is, "Glass, being a conductor of heat and a non-absorbent of moisture, it would seem it is not so well adapted to the requirements of bees in winter as would be a hive of wood, the character of which is, in these important respects, directly opposite. We have, however, for a number of years, successfully wintered a colony of bees in a glass hive, in a warm room."

An interesting letter from Chili, by the editor of the *Chilian Bee Journal*, is given, together with a picture of the writer, Mr. Lafitte himself, and two Chilian apiaries. His journal comes here, and I have noticed with much pleasure the excellent and progressive qualities of it in every respect. He says the general aspect and climate of Chili are especially adapted to bee-keeping. Some of the farms cover 40,000 and some 80,000 acres, and some are thirty or forty times as large as that. There is an enormous consumption of wax there for tapers in the Roman churches. One of the largest apiaries consists of 700 frame hives, 400 of which are

of the Dadant-Blatt system, and about 300 of the Langstroth-Simplicity style. These 700 hives are divided into five apiaries about two miles apart. So far as harvests are concerned, 110 lbs. per hive is the most that has been extracted. This was an apiary of 100 Dadant-Quinby hives. Deep frames are inconvenient in a climate like that of Chili.

L'APICULTEUR.

In our highly esteemed French cotemporary, *L'Apiculteur*, Mr. C. M. Weber comes out vigorously against the practice of clipping the wings of queens as taught by E. R. Root. He says, "This mutilation is contrary to nature. . . . Let the Yankees find their profit in these stubby clipped wings; but as for me, I prefer to let my queens remain winged, just as God created them in order that they might be fertilized." But after they are fertilized, what need have they of wings? If they serve man's purpose better when clipped, is it not his right to clip them? Mr. Weber's logic would keep him from clipping lambs' tails; but the lamb is happier without the tail, even if God did give him one to start life with. Again, if Mr. Weber is right it would be wrong to dehorn cattle; but if cattle are more useful to man when they are dehorned, surely it can be no more displeasing to God than it would be to cut down a hill to make a railroad, or to cut our hair and finger-nails to improve our appearance and enhance our comfort. If clipping is condemned it must be done on other grounds; and in practice Mr. Weber's "other grounds" for not clipping are found to be of no weight.

CUBA.

Not a Land Flowing with Milk and Honey; Some of the Drawbacks; Fleas; Price of Honey; Cost of Living, etc.

BY AN AMERICAN TRAMP.

Gentlemen:—In your letter of the 7th you ask me to send you a few lines about bee-keeping in Cuba as I find it. This I will do, hoping it may be the means of saving some money to my brother bee-keepers who come here, and more to those who stay away. I have just returned from a short trip through the country, and there is no doubt about Cuba being a fair "honey country." Extra large yields like some they have in California and some we had in Florida are not known here. The honey crop here will generally pay a bee-keeper fair wages; but I find in collecting data that some years are bad here too, so that, in an apiary of 375 hives in the hands of an expert bee-keeper, the crop did not pay him $300 for his year's work. I have seen but one location so far where I should care to risk over 300 hives in one place. Along the good roads here one can find an apiary every few miles, and more springing up every day. This, in connection with the farming population going back to work cultivating the fields, thus destroying the aguinaldo, which is the main stay of the honey crop, is going to reduce materially the honey-yield yearly.

The surplus honey-flow is from November till the first of March—some years longer and some years shorter. Most of the honey here is sold in Havana and shipped to Europe in barrels of 90 gallons. The cost of hauling these barrels on the best of roads a distance of eight miles is $2.00 each. One apiary on a railroad pays $2.35 per barrel a distance of about forty miles, and pays 80 cents freight for empty barrels the same distance. On this railroad they charge 13 cents per mile on a third-class passenger ticket. What a first-class ticket was I was afraid to ask. It costs a good deal to get around in Cuba.

The price of honey this year here is higher than it generally is. The present price is 48 cents per gallon. This is because so many apiaries were destroyed during the war. Some years the price has been as low as 24 cents per gallon. In one apiary I visited, the ground between the hives was just carpeted with dead bees, so thick you could not see the ground. The owner did not know what caused it. It was not from robbing or fighting, as it was all over the apiary. Can it be from some poisonous bloom? Can any reader tell? I looked into the hives, but found the bees in the hives in good condition. From what I have been informed by several bee-keepers there is considerable foul brood on the island; but from what I have seen, bees seem to thrive in almost any condition here.

You will probably get plenty of matter on the bright side of bee-keeping, so I will give the offset to it. A single man coming here to work in an apiary need not look for big wages. The wages paid bee-keepers is from $15 to $25 per month, and board. A man with a family intending to come to live here had better come alone first and see for himself. In the country there are no houses, almost all having been burned by the insurgents, and very few women from their homes in the United States would content themselves to live in these Cuban towns or cities, they being very filthy and dirty; besides, the houses are just alive with fleas. I have had to wash myself with kerosene oil on going to bed, so as to get some rest; otherwise the island is quite free from insects, the fleas being the worst.

The cost of living is also very high, but it is becoming cheaper daily. Flour is $8.00 per barrel; beef, 30 cents per pound, and all other things in proportion. But kerosene oil caps the climax, selling at retail all the way from 50 cents to $1.00 per gallon, and this in a country where you have to burn alcohol, oil, or charcoal (there being no wood), is quite an item. Why! sixty cents' worth of postage-stamps would cost a dollar here. The only things I have come across here that are cheap are cigars and alcoholic beverages. Just think of it, friend A. I. R.—good cigars two and

three cents each, and cognac and gin two and three cents a glass. You don't know how much I regret that I have no use for either. I have half a notion to learn to use both so as to take advantage of the only cheap thing in the country.

The last day of my trip I came across a man who has two gums of the stingless bees; but I had no time to investigate them. I promised him that, when I got time, I would go and transfer them into a frame hive. He said if I did he would give me one of the gums of bees, so I shall get a chance to see what they will do.

This is all for the present, from the Cuban-American TRAMP.

[I have concluded not to go to Cuba just yet If I must bathe myself in coal oil at $1.00 per gallon to keep off fleas I'll stay at home a while longer. Seriously, one should think twice before going to this land devastated by the hand of war. Conditions will improve, no doubt, in the near future. In the mean time the average bee-keeper better keep his good dollars and invest them at home.—ED]

SHALL WE EXTRACT BY HEAT OR MACHINERY?

A Hard Hit at Orthodoxy in Bee-keeping; a few Facts and Figures on the Question Whether it is More Profitable to Run for Wax and Honey than for Honey Alone.

BY W. A. H. GILSTRAP.

It is an almost painful fact that few things get so well settled that they remain so; and one man can knock figures down faster than fifty more able-bodied men can set them up. Below I propose to indulge in a little innocent calculating, which can easily be disproven by any one having a small experience or much theory. As this article is only suggestive it would be more profitable to hear from the former class.

Mr. Ridgepole man was condemned because he proposed at the Albany convention to run bees to wax more and honey less. That very thing has been done successfully for years by the Wolfe family, or families, rather, in San Joaquin Co., Cal. Mr. Milo Wolfe says he can support his family from 200 colonies of bees without selling a pound of honey. Of course, he would have to "feed back" to get the largest amount of wax. One year his father, Mr. Jacob Wolfe, obtained over a ton of wax from one apiary.

Perhaps you think they use a great deal of foundation. They have the bees start comb from V-top bars without a starter for either story. They have as good bees as you are likely to see in this country; have tried extractors, and now prefer melting their honey in solar extractors. Much of their honey is quite dark, but the wax is all right. Let's suppose the case. Suppose I extract the honey from 400 colonies in the "orthodox" way.

400 colonies at 100 lbs. honey each, 40,000 lbs., at 2½c		$1000 00
Wax at 1 per cent weight compared with the honey, 400 lbs., at 23c		92 00
Total,		$1092 00
Cans and cases	$200 00	
Sacks for wax, probably	10	
Net,		$ 891 90

Or suppose I melt the honey in solar extractors.

400 colonies at 50 lbs. honey each, 20,000 lbs., at 2½c		$500 00
Wax at 5 per cent weight compared with the honey, 1000 lbs. at 23c		230 00
Total,		$730 00
Cans and cases	$100 00	
Sacks for wax, probably	25	
Net,		$629 75
In favor of machine extracting		262 15

This, however, is not the real difference. Other factors must be considered. Melting takes less time, a cheaper hive, and less hauling, which is quite an item in some places. It also means more swarms if the extractor man lives up to his privilege. If the flow is very long I know it is an advantage to extract once, sometimes twice, from the brood-chamber early in the flow. If the honey comes in very late in the season, cool weather is sure to interfere with comb-building, somewhat to the detriment of the melting plan. On some ranges the amount of honey obtained by melting is not far below the output from extracting, which would give altogether a different result from that figured above.

In Jan. 15th issue, 1898, page 50, Mr. J. H. Martin says the San Francisco papers quoted the dark river honey of which I speak at 1¾ cents per pound. Of course, that is the lowest price on record; but as we are likely to have more of that price in the future, let us figure on that price from the above basis.

Extracting:

400 colonies at 100 lbs. honey each, 40,000 lbs., at 1¾c		$700 00
400 lbs. wax at 23		92 00
Total,		$792 00
Packages for honey and wax		200 10
Net,		$591 90

Melting:

400 colonies at 50 lbs. honey each (75 lbs. might be nearer correct), at 1¾c		$350 00
1000 lbs. wax at 23c		230 00
Total,		$580 00
Packages for honey and wax		100 25
Net,		$479 75
Apparent difference in favor of extracting		112 15

As the cost of labor, marketing, comb-building, cost of packages, etc., are not identical in

any two places where the bees and hives and other implements vary, each apiarist will have to consider his surroundings, and perhaps find the relative advantages of the two methods by experience.

Crows Landing, Cal., Nov. 30, 1898.

[When Mr. Aikin's article was read at the Buffalo convention I remember it raised a regular hubbub of protests. Such a doctrine as discarding the extractor, and cutting out the combs and putting them in wax-extractors, was too much for the bee-keepers present to indorse. Notwithstanding I would not go so far as to say there may not be something in it, for, as friend G. shows, a good deal depends upon conditions and circumstances. If honey should continue to go down, and wax go up, it might be well to pay more attention to the latter. In Cuba, I believe, wax is one of the important products from the hive.—Ed.]

SOME NOTES ON MARCH FIRST GLEANINGS.

A Valuable Article from an Old Correspondent.

BY J. A. GREEN.

THE AVERSION OF BEES TO BLACK CLOTHING.

It is somewhat surprising to me to note the number of bee-keeepers who do not believe that bees have any dislike to black clothing. My own experience has thoroughly convinced me that they have. I have many times noticed the fierce attack upon a black felt hat. In one of the most marked instances I ever noticed, the hat was a new one. It was not dirty, nor were there any fuzzy protuberances. Some would say that, in this case, the smell of the dye was obnoxious to the bees. Be that as it may, I have known hats, so old that any smell of the dye must have disappeared, to be attacked when hats equally old and dirty, but lighter in color, were let alone. Bees are certainly much more disposed to attack an object that is woolly or fuzzy than one that is smooth; but if the material is black, that propensity is increased. Black clothing that is neither new nor dirty nor fuzzy is still objectionable to bees, as I have found to my sorrow.

Much of the time during summer I wear bicycle clothing — knickerbockers and long stockings. One would naturally suppose this to be an ideal dress for the bee-keeper, because there would never be any danger of bees crawling up inside of one's trousers. But I soon found that, if I wore dark-colored stockings, even if they were of perfectly smooth material, and it seemed to make no difference whether they were of wool or cotton; and, even though they were fresh from the laundry, the bees made my legs a special object of attack. Now when I go into the apiary in this rig I take good care to put on overalls.

TRAVEL-STAIN.

The subject is an interesting one to me, and I regret that the discussion comes at a time of the year when it would be impossible for me to make any experiments or even to secure a sample of travel-stained honey unless I may be able to find one in the groceries. That travel-stain may be sometimes, at least, caused by the incorporation of darker substances into the wax of the cappings, I can testify from my own experience. I once placed over a super in which the bees were at work in the sections a set of old combs that were in such bad condition that the bees gnawed them considerably in repairing and rebuilding them. The fragments of old dark wax sifted down into the super below, where many of them were picked up and incorporated into the capping of the sections that were being finished.

At another time I observed bees mixing with the cappings of the sections fragments of dark-colored wax brought up from the brood-chamber below. But in these cases, as in some others I have noticed, the character and extent of the additions were quite visible and unmistakable, and the result had very little resemblance to ordinary travel stain.

The additions of propolis which are often made in the fall, or during idle periods in the summer, are likewise quite different from what is ordinarily known as travel-stain.

Mr. Crane is unwilling to admit that bees are so untidy in their habits as to soil honey by walking over it. Unpleasant as the idea may be, it would be quite as bad to be obliged to believe that the dark color of the cappings was caused by the incorporation into them of the sweepings and scrapings of the hive. It would be strange indeed if the continual passing and repassing of thousands of bees, dusted with pollen and working with honey, beeswax, and propolis, should not leave their marks. Turn a lot of bees loose in a room where they will gather on a window in the endeavor to get out, and how long will it be before the glass will have lost its crystal clearness? For a more marked illustration, notice the entrance of a hive that has been robbed, or any place where bees stealing honey have crowded through a comparatively small opening, and see how soon the edges become coated with a sticky dirt. This is an extreme case of travel-stain, but I believe it is in very much the same way that nearly all travel-stain is produced. Doubtless in most cases the coloring-material is pollen, and I should suppose that, in nearly all cases, it would be so incorporated with the rough surface of the capping that it would be impossible to wash it off.

OLD FOUNDATION.

I have often wondered how it could be that some of our writers have so persistently claimed that old foundation is just as readily accepted by the bees as fresh. I satisfied myself by thorough tests several years ago, and I have had the decision confirmed nearly every year since then, that bees show a decided preference for fresh foundation over what has been hung up in the air so long that it has become dry and hard. Try the experiment yourself. Devote at least half a dozen supers to it, placing them on as many different colonies. Fill each super half full of sections filled with foundation fresh from the box in which it came, or, better still, fresh from the mill. In

the other half use sections filled with foundation the season before. Place these supers on the hive at a time when the flow of honey is only moderate. Watch them closely as the bees begin work on them. If they do not show a decided preference for the fresh foundation, your experience will be entirely different from mine. I have never known it to fail, though when honey is coming in very freely, so that the bees go to work in the supers in a rush, the difference is not so noticeable.

Unless the foundation has been varnished with propolis, which sometimes ruins it entirely, the bees will always use it if honey is coming in freely; but during a moderate flow they sometimes show a very marked reluctance to using it.

With a short honey-flow a little delay in getting started may mean a great difference in results; so I consider it very doubtful economy to use foundation that has been long exposed to the air.

DEEP CELLS.

Having combs built so thick that the queen will not lay in them, as referred to on pages 132 and 165, looks plausible; but my experience has shown that, while it is somewhat of a deterrent, it can not be relied on as a complete preventive. In my extracting-supers I use seven combs in the space occupied by eight brood-combs. Most of these combs were made by transferring, so that it often happens that a part of the cells in a comb are fully 7/8 of an inch deep. At any time when the bees are desirous of extending the brood-nest they will use such combs without any hesitation, cutting down the thick combs to a proper depth of cell. In fact, it has sometimes seemed to me that the bees preferred to use these extracting-combs for brood rather than the regular brood-combs. When a queen is allowed free range through several sets of combs tiered above one another she is apt to desert the lower range of combs entirely, and lay in the second and third story, even when the combs in these upper stories require considerable alteration to fit them for brood-rearing.

SOAKING COMBS

in a solution of carbolic acid in order to disinfect them after foul brood, was once tried by me with a considerable number of combs. I decided that it was both risky and unprofitable. It is a very difficult matter to get all the cells of a comb filled with water. If a single infected cell resists the entrance of the water, your work is all for nothing. After soaking them in the carbolic-acid solution they must be soaked in plenty of clear water to remove the smell. They must then be dried. After all this soaking and rinsing, the bees did not seem to like to use them, so I concluded that the best way to disinfect such combs was to melt them into wax.

SELLING HONEY BY THE SECTION

instead of by weight has been my usual method for several years. Most of the grocers accept this method very cheerfully, and, after experience with the plan, prefer it. Those who do not, generally like to buy by weight and sell by piece, because they are thereby enabled to squeeze out an extra profit. I use sections seven to the foot, with separators, of course, and they run very uniform in weight.

Ottawa, Ill., Mar. 23.

THE DOOLITTLE METHOD.

Some Good Hints; the Superiority of the Doolittle-reared Queens.

BY J. J. COSBY.

After reading Mr. Doolittle's "Method of Queen-rearing in a Nutshell," as given in the Jan. 15th issue of GLEANINGS, I thought that perhaps some testimonials from one of his followers might prove to be beneficial to some of the many beginners.

I purchased his book about seven years ago, and have been very successful in rearing queens of the highest quality. Since, Mr. Doolittle says, on page 47, "Then there is a bare possibility that the deeper Gallup frame has something to do with it, but I think not."

Well, I wish to clear of doubt the mind of the reader by saying his "think not" is correct. I use the Hoffman frame, with good results. I prepare my hive as he directs in GLEANINGS, except that I use one of my very best queens, especially as to markings of progeny, honey-gathering, prolificness, gentleness, etc. In short, this queen must be second to none in the yard, so far as I can judge.

I want this queen to be the mother of my drones; and while I am feeding to secure good queens I am also feeding the same colony to secure an abundance of the very best and finest drones. Oh such beauties!

Why do we bee-keepers admire the beauties of the queen so much, and neglect the drone? But to return to the subject.

About April 5th to the 10th I put one or two combs of honey into this hive that was drone comb (after uncapping the cells), and about May 1st to 10th I put in one comb of sealed brood from hybrid colonies every two or three days until all ten-frames are full of brood (at this time the drone comb should be pretty well filled with drone brood, larvæ, and eggs).

Now, do not think that, because you have brood in all the frames, you are ready for the upper story. You should wait until enough bees hatch out to fill the brood-chamber crammed full; then you are ready to raise the two frames of larvæ and eggs, and put in their place two frames of sealed brood from your hybrids, and proceed as Mr. Doolittle has instructed, and I do not see how you can fail. It is not absolutely necessary to use hybrids to do the cell-building; you only get a greater per cent of the cell-cups accepted and completed by so doing.

Why are these queens better than queens reared from natural swarming? Because good queens are, as a rule, raised only in an abundance of bee-heat; and queens raised in this hotbed, as it were, of bee-heat, and kept there until just ready to hatch out, are bound to be

nearer Nature's way of rearing them than any other plan we know of.

"But," says one, "it will not pay me to raise queens."

Well, neither am I a queen-breeder. I have never advertised queens for sale. It pays me to raise my queens for the honey I get. How do I know this? By comparing my honey-records. My honey crop eight or ten years ago averaged from 25 to 50 lbs. per colony (and sometimes less). We will now take the record of the last three years; and to prove to you that last year was a poor year (allow me to digress a little), it was so poor that my neighbor, who had 23 colonies, got only 56 sections of honey, and another with 60 colonies got none whatever. Our bees worked on the same pasture, yet I secured an average of 72½ lbs. from 80 colonies, spring count, and increased to 100 colonies.

The year 1897 was a poor one. My average was 52 lbs. from 100 colonies, no increase. The year 1896 was good, my average being 122 lbs., all comb honey, from 54 colonies, spring count, and increased to 103.

My average, previous to 1896, was never over 50 lbs. per colony, and I do not know any cause for my increase of average except that of my queens being so much better. To get good average crops you must have all good queens. The queens are the propelling power of the apiary.

Evansville, Ind., Jan. 27.

GETAZ' METHOD OF PREVENTING INCREASE.

Dr. Miller's and the Editor's Objections Answered.

BY ADRIAN GETAZ.

Dear Friend Dr. Miller:—You and Ernest are giving it to me about that method of preventing increase, page 90. See Stray Straws, Feb. 15. The fact is, both you and Ernest strayed off the track, and failed to grasp all the circumstances of the case.

In the first place, note that the old queen is to be removed at once (I use queen-traps on all my hives, as I can not be always at the apiaries). This secures two points. One is, that there will be no more swarming until a young queen hatches, and during that time honey-gathering will go on as well as if there had been no swarming. The second is, that there is no more egg-laying until a new queen is ready to lay. We shall see presently what is the advantage of having no eggs laid.

About a week later one of the virgin queens emerges. Her first move is to try to destroy the other cells. Instinctively the bees defend the cells against her attack. The quarrel goes on for a day or two, when the bees (whether workers or queen or both I do not know) decide that such a state of affairs is getting to be a nuisance, and here goes the swarm. The queen-excluder, or a trap arranged as I described, prevents the queen from going out; and the result is, that the swarm returns at once. The next day brings a repetition of the program, but the swarm will remain out longer. This state of things will go on, the swarming bees remaining out each day for a longer time than the preceding, if the weather is good. What happens in the hive during that time? While the swarm is out, some of the young queens which so far have been retained in their cells by the bees will emerge, as there are not enough bees left in the hive to prevent them. The first thing they will do will be to engage in a fight that leaves only one alive. This, in turn, succeeds, during the absence of the swarm, in destroying the remaining cells, so in four or five days after the first virgin queen swarmed there will be only one queen left, no queen-cell, and, more than that, no unsealed brood to build any; and right there and then the colony goes to work in earnest, gathering surplus as actively as if no swarming had ever taken place; at least that has invariably been my experience, so there is a loss of only about four or five days, so far as gathering surplus is concerned.

You can now see where the importance is of removing the old queen at once; and that is the very point which you and Ernest have overlooked—or, rather, that I failed to explain sufficiently. If the old queen had remained, there would have been a daily swarming during a whole week before the emerging of the first virgin queen. Worse than that, eggs would have been laid during all that time, and perhaps during one or two weeks more; and as long as eggs would have been laid, queen-cells would have been built; and as long as queen cells and emerging queens had confronted each other, swarming would have grown from bad to worse, until, as Ernest puts it, the colony might just as well have been brimstoned so far as surplus is concerned.

The few days during which the colony is without eggs and unsealed brood is what cures the "swarming-fever," if there is any such thing, which I don't believe; but at any rate, after these few days there will be no attempt made at building queen-cells, even if a laying queen was introduced and had begun to lay at once. It seems that, during that time, the bees give up their notion of building queen-cells, and turn their attention to the next best thing, which, in such a case, is gathering honey. How many days, or, rather, how few days, without eggs and unsealed brood, it will take to cure the swarming-fever, I don't know. In a few cases, where I introduced laying queens, there were only four days, and that was sufficient. Whether four days would always be enough, or whether three days would do as well or not, I don't know.

It doesn't matter whether there is a virgin queen present or not. It is the absence of unsealed brood and eggs that effects the cure; and I suppose that a caged queen would not be an objection either, though I never tried it. It is hardly necessary to say that a loose queen and a caged queen together would not do.

Knoxville, Tenn., Feb. 21.

[Dr. Miller replies:]

In what I said about the matter, page 122, I had in mind only the trouble with swarms

after the old queen was out of the way. It is only fair to Mr. Getaz, however, to say that the old queen was left without any attention I think it was not a usual thing that the old queen was allowed to live till the first young queen emerged, and I doubt whether any trouble came from her laying. It is possible, however, that I may be mistaken on this last point. My impression is that the swarming after the first young queen emerged was kept up till the last young queen emerged; and when there was no longer a young queen in a cell it was a matter of not many hours to settle who should be rightful heir to the throne. I don't believe I have just the same view as the editor about losing a crop by their sulking. As I said before, I could stand the sulking if that was all, and I think I *would* stand it. The trouble was, when a lot of swarms came out and kept getting more desperate every day there was a big demoralization, some colonies being so badly depleted that they were of little use for storing, while others were too crowded for the best work. Worse than that was the fact that sometimes a young queen got out through the excluder, and then away went one of those mammoth swarms. These troubles did not come because of the presence of old queens but of young ones. I haven't said the result would be the same with Mr. Getaz; and if he never has a swarm go off with a young queen, and if he never has swarms return to the wrong hives, then I congratulate him on practicing what I believe to be an excellent plan. If I had an apiary of 25 or less, and had excluders that would not fail in the hour of need, I'd very much like to try the plan again. Indeed, I believe if I had excluders that wouldn't fail me I'd like to try it anyhow. My plan was to put on excluders *before* there was any swarming, then let the bees do the rest, up to the time of letting out the young queen to mate. That suited me better than to wait for swarming and then remove the queen. C. C. MILLER.

Marengo, Ill.

[As Mr. Getaz now explains the method in detail it does not seem to be so objectionable as it did at first. In fact, I feel strongly inclined to give it a trial this coming season. If I understand the method it is simply this: At the approach of the honey season, or perhaps, rather, about the time swarming would naturally commence, the laying queens are removed. Alley drone-traps are then placed over the entrances of the hives thus unqueened. While cell building is going on, and the hives are queenless, there will be no attempt at swarming until some queen emerges from one of the cells; and even then probably swarming would not take place until the queen was strong enough to fly. As the virgins can not get out through the perforated zinc, it is a battle royal, resulting in the survival of the fittest. Four or five days are lost, probably, in the height of the honey season; and if the season is very short, as it is in many localities (only about ten days), the plan would be very objectionable; but if it lasts a month, four or five days would not cut much of a figure.

Although friend Getaz does not say so, it is assumed, of course, that, when the young queens reach the right age, and the swarming-season, or swarming-fever, is over, the drone-traps are to be removed to allow the queens to become fertilized.

There is this to be said in favor of the plan: It involves only the labor of catching the queen and putting on the drone-trap. After that, the method works automatically almost through the season; but my oh my! there must be days when the air will be thick with swarms that have come out only to return. At our out-yard I feel morally certain there would be half a dozen farmers who would rush up here every few hours to inform us of the advent of swarms. Indeed, they would be so kind as to try to hive them.—ED.]

BEES AND COLORS.

Valuable Evidence Going to Show that Bees have a Decided Dislike for Black.

BY ELIAS FOX.

Friend Root:—I have carefully noticed the debate relative to bees being distinguishers of color. I should have written sooner, but have been sick all winter, and should have written years ago, but had no idea there was any difference of opinion on that subject. I have often wondered why there was not white material on the market for making bee-veils.

A number of years ago, when I kept my bees in the village, there was a passing team attacked by them—one a white and the other a dark bay with black mane and tail. He was killed by the enraged bees, which literally covered him and filled his nostrils, while the white one escaped with only a few stings.

I have noticed, too, when chickens were around the fronts of the hives, if there was a black or dark-colored one it would be attacked, when the light-colored ones would not be disturbed. As a rule I wear overalls or light-colored pants in the apiary, and it is a very rare thing to see a bee attack them; but let me open a hive when I have black pants on, and there will be from one to a dozen stings in them, almost before you can think. My wife often accompanies me to the apiary; and if there is a black ribbon or feather (smooth or otherwise) they will never fail to find it. I have always noticed, too, that, if I have no veil on, their attacks are either at the mustache, eyes, eyebrows, or right under the hat-rim; and if I get any stings about the hands, nine times out of ten it will be near or under the shady edge of the sleeve. I have many times had them so angry they would even fight the smoker, and the attack is always at the nozzle. I have even seen them strike dark spots and knots on boards; and many times, when empty hives are sitting near, I have seen them strike and restrike the auger-holes in front of the hives. Let two men go into an apiary, one wearing a black hat and the other a white one, and see if the black is not attacked first. If you have an idea there might be

a difference in the scent of the two, let them change hats and see if they don't still find the black one. I have kept bees for 17 years, and this has been my experience.

Hillsboro, Wis., Mar. 6.

[In view of the former evidence to the same effect, I do not believe that I was at all hasty in concluding that bees do dislike black objects. Mr. Martin (Rambler), in taking the opposite view, cites the fact that bees are more inclined to sting the white leg than the black pants. But this is not a matter of color. The leg itself has an odor that gives the bees a distinct knowledge of that part which is animate and that which is inanimate.—Ed.]

TEMPERATURE OF BOILING HONEY.

225 and 235 F., according to the Specific Gravity of the Honey; the Difference between Spores and the Bacilli Themselves very Clearly Set Forth.

BY HARRY S. HOWE.

I have read with great interest the articles on foul brood which have appeared in the bee-journals this winter. I am putting in a year's work here at Cornell University in the attempt to work out some of those very problems.

When I read those notes on the temperature of boiling honey, the first thing I did was to hunt up some samples to represent the extremes of ripeness and body, and carry them up to the bacteriological laboratory. The samples were first placed in large test-tubes, and heated in a water-bath until the water boiled, which was at a temperature of 210¼° F.—about what was to be expected at this altitude. Even after considerable time the honey would not go above 209°. The tubes were then taken out of the water, and heated over a gas flame until the honey boiled vigorously, when the temperature of the best sample was 235°, and the thin one 225°. The thermometers used were standard ones, made and tested expressly for bacteriological work. Care was taken to see that the bulbs did not touch the sides of the test-tubes, and that the temperature reached nearly that of the boiling honey itself.

The experiments were repeated several times to make sure that no mistake had occurred. Each time samples from the same lot of honey reached the same point. A slight addition of water reduced this several degrees, showing that the boiling-point depended upon the specific gravity of the honey.

Prof. Hodge speaks of the three boilings, which are part of the routine work of a bacteriological laboratory in sterilizing culture media, and on that account advised the three boilings for honey. There is, however, a very important reason why this will not apply to foul-broody honey. The reason, as he states it, for the three boilings of culture media, is to kill the germs in the vegetative stage, having just time enough between the treatments for the spores to develop, but not long enough for them to form spores again. This is all right in a medium in which the spores will develop; but the spores of *Bacillus alvei* do not develop in honey, nor can the bacillus live in honey except in the spore stage. We might boil the honey as many times as we wish, and not kill the spores, if each boiling were just too short to kill them.

As to the time to do this, I am not yet sure. I have been working for some time on this point, without coming to any conclusion as to

CALIFORNIA LILAC.

the least possible time necessary to kill the spores. There seems to be a difference, depending on the age of the culture used, media employed, etc. Most text books on bacteriology advise boiling half an hour. At the boiling-point of honey it would take a shorter time. My experiments seem to show that 15 minutes is a safe time.

Dr. Miller speaks of gelatine being about the same specific gravity as honey, which would give about the same boiling-point. Gelatine, however, is used only for work at temperatures below body heat. It is not even used in the incubator. The thermal death-point of bacteria is usually worked out on bouillon.

As to microscopic determination of *Bacillus alvei*, it takes a long training in the study of the closely allied forms before one can make such a diagnosis. The only point of difference between this and several others is the size of the spores. Accurate work with a microscope that will admit of their being measured at all is one of the most delicate operations of microscopic work ; while staining the spores is, to say the least, not the easiest thing in bacteriology.

It is quite easy to determine *Bacillus alvei* by cultural methods. One can not work satisfactorily without quite an expensive outfit besides the microscope. The microscopes in use in this laboratory are fitted with a ⅙ dry and a $\frac{1}{12}$ oil immersion lens. We are required to use the $\frac{1}{12}$ in making measurements, and in determining the morphological characters of the bacteria.

If one suspects foul brood, the best thing is to send a sample, securely sealed, to some one who has all the facilities for studying it. I am willing to undertake this work free of charge as long as I am where I can, for the sake of the practice.

Ithaca, N. Y.

[The experiment recorded above shows that the temperature I obtained, as mentioned on page 233, was very nearly right, for I secured a figure of 232, with honey about the same as the best sample Mr. Howe speaks of. Right in this connection it might be interesting to place here an extract from an article written by Prof. Henry W. Brice, a skilled microscopist, in the *British Bee Journal* for March 23. He says :

If a substance containing bacteria be boiled, all developed germs are destroyed ; and if then left for twenty-four hours, and a suitable medium be present, the spores will germinate ; then, on boiling again, these are in turn destroyed, and if left for a like period a further number will be found to exist. The process of boiling must, therefore, be again repeated, until the medium is perfectly free. *No boiling alone will destroy the spores while they remain in that condition.* This I have proved entirely to my own satisfaction.

From what has been given by Mr. Howe and by Prof. Brice especially, it would appear to me that, if no boiling alone will destroy the *spores* of foul brood, then how can 15 minutes' at 235 F be long enough? I should be inclined to believe that half an hour or a whole hour might still be insufficient. I am not yet ready to get over on Bro. Taylor's side of the fence. Even Mr. Cowan himself speaks of the great resistance of spores to acids and to high temperatures.

Suppose, for example, we boil some honey an hour, and the spores are not destroyed, and then feed this to the bees again. As soon as these same spores get into the organisms of the larvæ they would develop and produce the disease again. To my notion, then, and from the present light I have, I should not favor giving the bees honey from the foul-broody stock, even if it had been boiled an hour. The danger of extracting this honey, the danger of handling the combs at all, even if it is intended to melt them up, is so great that, in my humble opinion, it would be far safer to burn all such combs, brood and honey alike, and then bury the ashes. In any event the amount of wax and honey saved would be very small—too small to compensate for the great risk.—ED.]

CALIFORNIA LILAC, BUCKTHORN FAMILY.

Ceanothus Divaricatus.—See Cut.

BY J. H. MARTIN.

The California lilac is a compact bush that grows to a height of six or eight feet, and is very plentiful in the southern portion of the State. It commences to bloom in January and February near the coast, and as late as March and April in the interior. The blossom is very small, but borne in clusters two or three inches in length, and varies from pale blue to pure white. It is very profuse in bloom, and a symmetrical bush looks like an immense snowball. When the plain or mountain side is covered with these shrubs it presents a deep-green appearance, and a glory of misty blue or white during its bloom. It is not so fragrant as the domestic lilac of the East. The bees frequent its blossoms, and secure both pollen and honey. With alfilarilla first and lilac next, the bees get a good start in brood-rearing. During this dry season the alfilarilla has not put in an appearance to any extent, and the bees seem to be gleaning with more vigor from the lilac.

The photo gives a very good representation of the shrub, also of the average California bee-hive. In the foreground there is a new growth of wild buckwheat, and at the right a cactus rearing its bristly head.

REARING GOOD QUEENS.

Seasons of Rest Important; Rearing in Upper Stories.

BY HENRY ALLEY.

I sometimes think that the whole story of bees has been told ; but with each issue of GLEANINGS there is still a good deal that is new and very interesting. I am especially interested in all articles relating to rearing queens, and such matters catch my eye readily. I can't say that there is much, even on this subject, that is very new; yet each writer has an idea that he has found a new way of

doing something his neighbors know nothing about.

In Gleanings for Jan. 1, p. 14, Mr. Bonney describes a way to rear giant queens. This statement reminds me of the discussion some years ago in the bee-papers in relation to rearing giant worker bees. The idea was to fill a hive with all drone-comb foundation, and thus compel the queen to deposit her eggs in drone-cells. I don't remember whether or not the experiment was tested, but I do remember an experiment I tried to force a colony of bees to rear some drones. I filled a hive with nearly all drone comb, and the queen was obliged to lay eggs in drone-cells. This experiment was watched with a good deal of interest; and when I found eggs in the drone-cells I thought my experiment was working first rate. In due time the cells were capped over, but not as drone brood is usually sealed in. When the bees hatched out of those cells they were no larger than bees reared in the natural worker-brood comb.

I wonder where Mr. Bonney would draw the line on size of the cell-cups. Can't he make the artificial cups as large as half a hen's egg, and rear queens in the same proportion? If Mr. B. reared extra large queens by that one experiment, the size of the queens was owing to some other cause than the mere fact that the cell-cups were larger that the natural size. I can not think that bees can be fooled by any such device. The best that mankind can expect to do is to keep up with nature. We can't expect to go ahead very much. I am aware that a good deal can be said on this point, therefore I drop the matter here.

Good queens can be reared by nearly all the methods given. In my queen-rearing experience I find there are times in the season, even in mid-summer, when bees are not disposed to rear first-class queens. Just after the honey-harvest in July is the worst time to rear queens. Bees at that time seem to think they should take a vacation. They need rest. Every thing should have a season of rest, and why not the bees? It is said that a railroad locomotive needs rest, so that the strained parts may settle back into position, and the strain on the machinery be relaxed for awhile. I do believe in rest for the bees. I have found that from the last of July to about the first of September is a good time for rearing the very best queens

I read what Mr. Doolittle had to say about the fine queens he reared above the brood-nest. I have found that one strong colony of bees will rear an unlimited number of queens from cell-cups in any season. It is a good way to get queens. I reared but few queens by that method in 1898. If the method I tested last season works well another year, most likely no more queens will be reared in my apiary, above the brood-nest. Later on I intend to tell the bee-keeping public about this new idea.

In the production of honey the bee-keeper has got right down to nature's best methods. In producing queens we are away off. In getting large amounts of honey it is not necessary to give the bees an impression that they are about to starve. But in producing queens the bees *must* be made to understand that more queens are needed, and that the existence of the colony depends upon the number and kind they are expected to rear.

In rearing queens a necessity for a new queen must be made apparent. When bees are made queenless the colony soon understand the situation, and go about the business of supplying another queen. A colony in this latter condition, I claim, will produce a much better quality of queens than a colony that has a good fertile queen, except when the colony is about to cast a natural swarm. Of course, it is understood by all, that, when queens are being reared above a brood-nest that has a queen, and at a time when there is no field forage, the bees must be fed liberally. This same thing applies to rearing queens by queenless bees if good queens are to be reared.

Wenham, Mass.

SELLING COMB HONEY.

Why Some Colonies do Better than Others.

BY S. F. MILLER.

Mr. Editor:—In Gleanings for March 15 you give the foul-brood bill now before the Michigan legislature. I think we ought to have a law of that kind in every State. But they haven't quite enough of it. The most important part of it they haven't got; and that is, that every expert of a bee-keeper, or any crank of a bee-keeper who is foolish enough to manipulate his bees to death by tearing up the brood-nest and spreading the brood to such an extent as to chill it cool nights, and thus cause foul brood, is the one who ought to be arrested and fined and imprisoned, and made to go out of the business.

Well, Mr. Editor, I have not asked you any questions since you first went on the editorial staff; and now I am going to give you a hard question:

In one of my apiaries I had 9 colonies of bees last season, and 7 of them were of equal strength, and not one of them swarmed. They were very strong, and I had them tiered up with a second story for extracted and big-comb honey in the brood-frames; and now the question: One of them filled every thing full from top to bottom, and the rest of the colonies gathered no honey to amount to any thing. Answer in Gleanings; and if you can't I will. The answer is an interesting one.

These bees were all healthy, and in good shape. Last year was a very poor one with us. I have had some experience in bee-keeping; have been in the business 19 years. I have 42 apiaries scattered over a territory of 20 miles east and west of North Manchester, and 12 miles north and south—that is, a territory 20 by 12 miles. I have them among the farmers. I do nothing but work them for honey. The farmers attend to the hiving. The most of those bees belong to the farmers, and I work them for honey. I work only about 300 colonies, or perhaps 350. I have a few in two different towns. Probably what is

the poorest location one year may be the best next.

I work mostly for big-comb honey in brood-frames in upper stories. I use a queen-excluder, and put in two empty combs on one side to get the bees started up, and the rest are empty frames with good starters all around except the bottom. I can raise more comb honey in this way by far than I can in small sections, and have two combs to every hive for extracting, besides. My! but this big-comb honey does sell! People come with big jars and dish-pans and candy-buckets and tin pails. Where I sell by mail orders I ship in candy-buckets and tin pails. Sometimes an old farmer will come along and take a whole upper story right in the frames. People say this big-comb honey is by far better matured and better flavored than the small-section honey. Think of a Simplicity frame weighing 9 lbs. Bite into one of them, and you go in over your eyes. Think of an entire cluster of bees all working together instead of being divided up into 32 little squads!

I sell my big-comb honey at 10 cents per pound — cheap enough for farmers to buy for work-hands. The low price for something extra makes it sell. All colonies that I think will not swarm, and all new early swarms, I work for small-section honey; but I can control swarming to some extent by working for "big comb honey" as the people call it.

Where bees were not well protected, the loss this winter is heavy in our portion of the country My loss is altogether from starvation. I lose about ten per cent. I winter out of doors in single-walled hives. I use the Hill device, and pack well with carpet and lots of rags.

North Manchester, Ind., March 20.

[Knowing all the circumstances, you are doubtless able to give a reason why that one colony should do so well in comparison with the others, that is a correct one; but from this point of view I can only suggest that if, as you say, those seven colonies were equal in every respect so far as strength and quarters were concerned, that the one that so far outstripped the others had better workers We once had a colony in our apiary that would fill its hive full of honey when the other bees would be almost on the verge of starvation. Work? We never had any thing like them. Rob? They would clean out any thing they could fight down. The queen of this colony we called the "honey queen," and her daughters were sold at advanced prices. Now, I can only guess that possibly the queen of that particular colony you refer to is the mother of an active strain of bees; and if I am correct in my surmises you have a queen whose stock would be worth developing.

With regard to chunk honey, there are some localities where consumers take more kindly to honey in this form than in the latest section honey-boxes. That more honey can be produced in this way is doubtless true; for the bees will not store so much honey in a lot of small compartments shut off by themselves as they will in one large compartment. That is one reason why I advocate and prefer plain sections and fences—because they afford a more open communication.—ED.]

HOW TO START BEES IN SECTIONS.

Production of Comb and Extracted Honey; a Valuable Article.

BY MRS. A. J. BARBER.

I have been, for several years, very much interested in trying and comparing different methods of handling bees for comb honey. I have been in the business for eight years, and have had fair success. For the first five years I tried a different method each year. Three years ago I tried an experiment that succeeded so well I have followed it up, and have in a measure overcome the two greatest difficulties that I had to contend with—loafing and swarming. We use the eight-frame Dovetailed hives with section-holders for 4¼x4¼ sections. Our bees would always begin to loaf or hang out on the front of the hives when we put on the sections, and most of them would do but little in the sections until they had lost several days, and then would swarm, thus losing several days of the first alfalfa bloom.

I had sixty colonies of Italians in my out-apiary, and in trying my experiment I tried to be fair. I took 30 supers of half-depth extracting-frames full of comb from the home apiary, and put them on 30 hives in the out-apiary at the same time that I put sections on the other 30 hives. In four or five days the extracting-combs were full of new honey, and the bees excited and busy at their work, while most of those having sections were loafing, and some had swarmed.

I raised the combs by putting a super of sections between them and the brood-nest. At the end of two weeks from putting on the combs those sections under the combs were better filled than those on the hives that had no combs. As soon as the combs were sealed I put them away to extract, having that amount of honey extra, and the bees started nicely in their work. I had only about a third as many swarms from those hives as from the ones with sections and no combs

I liked the plan so well that last year I had enough of those little combs built to furnish a super of them to every colony that was to be run for section honey.

I tried the plan again this year, and from 75 colonies at the out-apiary I had 8000 fine white marketable sections, about 500 lbs. of unfinished and imperfect sections, 1500 lbs. of extracted honey, and about 60 lbs of beeswax, and two barrels of vinegar. We got short of fixtures, and I had to cut out some of my little combs and have the bees build them again to keep them at work. I forgot to mention that we sell a lot of those combs to families for home use, as we can sell them cheaper than sections. When we cut them out we do so after extracting, and then the washings make good vinegar, and the wax goes into the solar extractor, and is of the best quality. We leave half an inch of comb at the top of the frame, to save putting in foundation. I do

not believe we shall ever be able to overcome swarming entirely, but I believe my plan stops the loafing better than any thing else I know of. We had 57 swarms this year, but no loafing in the out-apiary. We have bought an extractor for that apiary, and will continue to run on that plan to start them to work. After the first super of sections is well started there is no more trouble about loafing. My neighbors' bees loafed and swarmed through all the best of the season, while mine were hard at work. I wish some one would try my plan, and report.

Mancos, Colo., Nov. 17, 1898.

[There, Mrs. B., you have struck a keynote I have been trying to sound for the last two years. I have found, as you say, that colonies given sections are often—yes, generally—loath to enter them; but if they are given a set of extracting-combs they will go right to work—that is, if there is any honey in the field. Now, when those colonies get into the working-fever (instead of swarming-fever) they will keep right on, even if a super of sections is given them. Some of my friends could not understand how I could produce both comb and extracted honey on the same hive to advantage. The plan I pursued was the same as this, almost exactly. I *know* it has worked very satisfactorily at our out-yard, where I gave it my personal attention, not by directing the work, but by doing it myself. In many cases I used full-depth stories of extracting-combs, but with colonies of moderate strength a half-depth story was used.

Now, I am not going to claim that I discovered this method before you did; but until some one else claims it I propose to call it the Barber method of producing comb and extracted honey.—Ed.]

RAMBLE 165.

A New Treatment for Foul Brood.

BY RAMBLER.

Whenever you find foul brood in a comb, uncap it and wash it all out under a faucet of water running with considerable force. When thoroughly washed, shake out the water as clean as possible; then make a solution of one teaspoonful of *formalin* to one quart of water. Spray the cells full of this solution; place the combs in a pile, and allow them to remain two days; then shake out the solution and return the combs to the hive. In the treatment as given by Dr. Chase he takes the combs only as they show the disease, and continues the practice until all vestige of the disease disappears in the apiary, which would probably take much time.

In treating a colony as a whole it would be necessary to put the bees on dry combs or in a box where they could be put through the starving process while their own combs and hive were being treated. The moist combs could be given them one or two at a time until all are returned. If the treatment will cure, as the doctor assured me it would, the method can be varied to suit the convenience of the operator. The great advantage gained in this treatment is the non-destruction of the combs.

Formalin is a comparatively new antiseptic, and the most powerful now in use. It is largely used by the Red Cross Society in their work in the army. It is manufactured in Germany under a secret process, and is not an expensive remedy.

To persons who wish to try this remedy I would suggest that, where there is honey in a comb, and we wish to make a thorough job, the honey should be extracted and the comb returned to the hive for the bees to clean up; then there will be no danger of other bees sipping the wash where there might be disease-germs. Or instead of washing under a faucet, which would be extremely inconvenient in nearly all of our California apiaries, as the next best thing put the combs to soak in a tank of water. Changes of water with formalin added could be used. I am aware that there has been a prejudice created against the use of drugs, or, rather, has grown from the repeated failures of their use, and to such an extent that Mr. McEvoy, one of our best authorities, comes out squarely and says that foul brood can *never* be cured with drugs. Now, we may be somewhat skeptical when a new treatment with a drug appears; but are we to take the dictum of any one person, and never make another trial? It seems to me if we do, the bars are put up against all progress and seeking for better methods of treatment. I believe that, if there is the merest shadow for success, we should let down the bars and continue the experimentation with drugs.

I can readily understand that, where the germ becomes dried down in the bottom of a cell, or where it is covered with honey, fumigation or slight spraying would have no effect; but by putting said germ to soak for several days there is a chance of rendering it open to the influence of the proper drug. I think I have made Dr. Chase's treatment sufficiently plain so that any one can give it a thorough trial.

Dr. Chase also uses another antiseptic for protecting combs from the ravages of the moth-worm. He allowed me to examine several brood-combs wherein were the well-known silken galleries and the worms, but the latter were dead. His treatment is to set the hives containing the combs in a pile of several in height; place under the bottom hive a few drops of *bisulphide of carbon*, and it soon accomplishes its mission. Comb honey can be treated in the same way, or the disinfectant can be sprinkled liberally in a room where comb honey or brood-combs are stored, with the same effect.

In his practical work in the apiary the doctor uses the Hoffman hive and frame, but it is shortened up to 14 inches in length, and he uses nine frames in a hive, which makes the surface nearly square. He thinks a large hive is not adapted to the climatic conditions in Oregon, as there is so much moisture during certain portions of the year that all portions of the brood-combs that are exposed mold.

With this shorter length the bees can cover all the combs, and mold is prevented.

The doctor's product is nearly all comb honey, and he sells it in the home market at 10 cts. per lb. He complains that the farmer bee-keepers sometimes ruin his market by selling their honey at a lower price than is necessary. Said he, "I should like to see some of those fellows who can write so glibly about selling honey in the home market just come here and try it about the time our farmers bring in their honey. I'd like to have them show me how to do it."

The doctor informed me that, though he had sold thousands of hives, there are not many bee-keepers in Oregon who are in the business extensively or exclusively. There are but few in the Willamette Valley and to the south. The greater number are in the northern portion of the State.

THE WAY THEY GROW CHERRIES IN OREGON.

The seasons are variable in this portion of Oregon. In one of the extra seasons, the doctor had produced 200 lbs. of comb honey from one colony of bees, and on one occasion one colony stored 150 lbs in ten days from fruit-bloom. The doctor did not say what particular fruit was most plentiful around Salem; but one can readily imagine that, if bees were near one of those large cherry-orchards which are plentiful in some parts of Oregon, the bees could do a good business in their vicinity. White clover makes a rank growth here; and when the weather is favorable bees do well upon it; but the doctor has known it to be so rainy during the height of the bloom that the bees would not get a drop of honey from it. I suppose it is just as aggravating to the Oregon bee-keeper to have such an abundance of water as it is for us here in California to have such a meager supply.

It is needless to say that I passed two agreeable hours with Dr. Chase; and when I left him I mentally hoped that the blessed bees would again give him success.

The grocer and the doctor gave me directions how to find another bee-keeper who lived two miles out of town; but the misty condition of the weather, and the fact that, through the blunder of the baggage-smasher, my bicycle had been sent on to Portland, caused me to leave in pursuit of it.

At Salem I had a choice of routes to Portland, either by rail or water. The Willamette River is navigable over the intervening 52 miles for quite large boats, and much further up for smaller ones.

At Oregon City, 13 miles from Portland, the river cuts its way through the basalt rocks, and a portion of the city has a very picturesque appearance perched upon the summit of a cliff. The river here plunges over a fall of 42 feet, and gives an immense waterpower, which is utilized for large woolen, paper, and other mills, besides having an electric plant which supplies Portland and all the surrounding towns with light and power. A canal with locks allows steamers to pass this barrier.

The Willamette Valley, which I entered over the Calipooia Mountains, is about 150 miles in length by an average of 75 in width; and it is most fertile and productive. Its output of wheat in 1897 was over 7,000,000 bushels. I found that much of the land was held in tracts of 640 acres. The first settlers were given that amount. Although the valley is the most thickly settled of any portion of Oregon, it would bear a much greater population should these large holdings be broken up. I also find that land is not held at such high valuation as in California. I am informed that prices range from $5.00 to $35.00 per acre.

Oregon, as the reader may know, is divided into East and West Oregon by the Cascade range of mountains. While the eastern portion is at a higher elevation, and colder, the western portion enjoys an equable temperature; and while it is termed Webfoot on account of the amount of the rainfall, the precipitation is no greater than it is in New York or the New England States. I mention these facts because I have received inquiries from the home-seeker about Oregon. In my humble judgment it is better for a young man to make his home in some of these fertile far-western States, where a few acres will produce more than a hundred on the stony hills of the far East. Bee-keeping can be run in connection with fruit-raising; and as the trees become more plentiful and larger, the possibilities of honey from that source alone are encouraging. Just imagine the work there would be for an apiary near a cherry or prune orchard of several thousand trees in full bloom! The western counties of the State seem to be the natural home of the cherry, and it can grow to its greatest perfection only where the bee can perform its work of fertilization.

There were bee-keepers of more or less local note near the little towns of Oregon City and Milwaukie; but they were out a few miles, and the mist and the mud presented an insuper-

able barrier to calls, and I hastened along to Portland.

Having in mind the fate of Bill Greene in Portland, and the warning it conveyed, and to fortify myself against any such occurrence, I secured a fine asylum on the fifth floor of the Goodenough building, strictly temperate, especially on the fifth floor. Here I just luxuriated a few days in writing letters and listening to

> The raindrops' showery dance and rhythmic beat,
> With tinkling of innumerable feet

on the tin roof. As I listened, and calmly looked down from my fifth story, and saw the ladies passing to and fro, I used Judge Levering's phrase about rain, and exclaimed, "Let her rip!"

Since my return to Southern California the above formula has been placed in the hands of Mr. M. R. Kuehne, of San Bernardino Co., and he is at present giving it a thorough trial with some hopes of success. Where he has not been successful he attributes it to not having conveniences such as he needed for carrying out his experiments. With his first trials he is confident that he has greatly reduced the ravages of foul brood in the hives operated upon. Further reports will be given later.

[This new treatment for foul brood may work; but in any case it appears to me it would involve considerable labor and some risk; for how is one to know whether he has washed out all the diseased cells? A good deal of apparently healthy brood has the spores of the disease in the blood; and as soon as these develop, the larva dies and decay sets in. I have come to believe that it is dangerous to fuss with foul-broody combs. I would not even melt them up into wax. I would burn them. It saves time and risk. I never yet had a case where the bees of an affected hive drew out foundation but that the resulting comb and brood were perfectly healthy.

I should like to know about this formalin, however. I am not yet satisfied that there has been discovered hitherto a real antiseptic for foul brood. If there are any of our readers who are in position to try this new treatment I wish they would give us the results of their experiments—especially with formalin.—Ed.]

FEEDING OUTSIDE THE HIVE, VERSUS INSIDE FEEDING.

Question.—It will be necessary for me to feed my bees considerable this spring, and I wish to know how best to do it. Will it be better to put the feed in shallow troughs out a few rods from the hives, as I see recommended by some, or should I feed in the hive?

Answer.—Outside feeding has been recommended in the past by some good apiarists; and where there are no bees, either in the woods near by or at some of the neighboring farms or houses within two miles of the person wishing to feed, the plan will do. But, as a rule, the person undertaking feeding in such a way finds out sooner or later that he is feeding many other bees as well as his own, and it is not a real pleasant feeling that comes over one when he realizes that he is at dollars of expense feeding bees from which they can not expect to reap any pecuniary benefit. Then such feeding is very liable to engender robbing, especially if the feed given contains any honey, and if given in the scanty supply that is often recommended in stimulative feeding; for when the feed gives out, along in the hottest part of the day, the scent of the just stored feed from the hives places a great temptation before such bees as have just before been carrying feed to their fullest capacity, on now finding themselves suddenly deprived of any more work to do, so they set about trying to get the savory sweet from the hives from which the savor comes; and woe betide the weak colony that does not have sufficient numbers to repel the attack of a numerous throng of excited marauders which have been appetite-whetted only just before, with nothing now, in a legitimate sense, to supply that appetite. Bees placed in such a condition are made fools and robbers to a tenfold greater extent than they naturally are where "left to their own sweet will;" and for this reason alone I do not think it ever advisable to feed outside unless it can be done generously enough so that the bees can have a *full* supply the whole of the day in which feeding is commenced in the morning.

Then, again, by such outside feeding, bees can not be fed in *proportion to their needs*, one colony as compared with the others. Some of the colonies in the yard may have all the honey in their hives that is for their best good, while other colonies may be nearly or entirely destitute, and in a wholesale outside feeding there is nothing to hinder those colonies having plenty of honey from securing fully as much as those on the verge of starvation; and thus it comes about that, while the needy ones are helped, those having an abundance are hindered, from the amount coming into the hive taking up the already scanty supply of cells left vacant for the queen to deposit her eggs in. Thus we have a crowding-out of the queen just at the time when she should have all the room needed in which to deposit eggs which are to develop into the workers for the honey-harvest only a little way ahead. Then should the day in which you commence to feed prove to be one of those fitful ones which we often have in the spring, after an entirely clear, pleasant morning, when the wind rises up, and floating clouds pass over the sun, causing a few minutes of bright sunshine and an equal number of cloudy chilly minutes, many bees will be lost by trying to carry the feed at a time when they will become chilled before they get fairly loaded, or *en route* home; and the loss of a single bee at this season of the year is of more account than the loss of a score—yea, of a hundred—would be just after the harvest of white honey is past.

I know that there is something very fascinating about this outside feeding, especially seeing the bees go to and fro in their eager scramble after the coveted sweets; but after years of experimenting along this line I have come to the conclusion that such feeding, as a rule, is a "delusion and a snare;" and it is really but little more work to feed inside the hive, especially if you can have combs of sealed honey to set in the colonies which do not have sufficient stores.

During the first warm days of spring each colony should be examined to find out regarding their supply of stores, and queen. If they have plenty of stores and a good queen, such colonies need not be looked after further till the surplus is placed on the hive, especially by the person who does not think a gain can be made by a spreading of the brood. As to what plenty of honey would mean during early spring, I place the amount at from 10 to 15 pounds. Then if the weather is favorable during all of the early bloom, especially the fruit-trees, they need no further looking after as to stores; but should the weather be such that the bees can secure nothing during fruit-bloom it may be necessary to feed even those which had 15 lbs. of stores in early spring; for honey is consumed very rapidly when brood rearing has reached its height unless there is some coming into the hive almost daily to take the place of that turned into brood. Hence it becomes every person keeping bees to be alert in this matter of stores during the time of the most prolific brood-rearing. Those which do not have the supply of stores named above should be fed in some way. While many believe it pays to feed nightly for stimulating purposes, nearly 30 years of experience along the feeding line compels me to say that, with myself, there is not enough gain made by such feeding, over and above what brood the bees would naturally rear where they have plenty of stores, to pay for the extra work of feeding; hence I prefer the plan of setting in full combs of honey for each colony which does not have at least 10 pounds of honey in early spring, till they have that amount, or, better, the 15 pounds. If I do not have combs of honey enough to go around to all needy colonies I fill combs with syrup to supply the place of the combs of honey.

To fill the combs, take any old milk-pan and punch the bottom full of holes about one-sixteenth of an inch in diameter, punching from the inside out. Place this pan over a wash-tub, or any vessel having a large open mouth, in which you can have room to hold the combs about 18 inches below the pan, when an assistant will pour the (about blood warm) syrup in the pan, from which it will be distributed in small streams which, when falling into the cells, will force the air from them, thus filling them, while other modes of pouring the syrup would result in its running over the surface of the comb more largely, instead of entering the cells. As soon as one side is filled, turn over and fill the other, when the comb is hung away to drain, after which it can be used in any spot or place where a frame of sealed honey can. But this is only my preference. Others can feed as suits their fancy. I give this only as my mode of working after trying nearly every plan yet given to the public.

[We make the following extracts from a paper read by R. C. Aikin at a farmers' institute in Colorado. Although much of it is well known to most of our readers, it is a subject that can not be too strongly impressed on the minds of the general public.—ED.]

There are in the minds of the masses some very crude and erroneous ideas in regard to bees, their habits, and their usefulness. As an illustration, let me tell you what has been reported to me as having been said by a farmer whose face is often seen in these meetings, and who is counted as an intelligent man. Speaking of bees and their owners, he was reported to have said, "The man who keeps bees is just stealing from his neighbors." Your humble servant is one of the thieves hereabout, according to that man's idea. I can, however, produce the proof that my robbed friend is not giving a just compensation to me (my bees) for what he is benefited by them. No, no, brethren, the bee has a very prominent and important place in the economy of nature, and particularly in relation to fruit production. Instead of the bee becoming a damage to the fruit industry, it is an indispensable aid. Instead of the fruit-grower striving to exclude the bees from his orchards, he should encourage their visits. The bees working on the fruit-bloom means far more in returns to the orchardist than that received by the apiarist.

Every bloom must be fertilized; and if not, no fruit will be borne. It is a part of the economy of nature that insects aid in the pollenization of bloom, and of the insects useful in this way the bee stands first of all, particularly in relation to fruit. Botanists tell us that the nectar in the bloom is there for the express purpose of enticing the bee, and that the flower will not secrete the nectar until it has reached that point of development when it is ready for the visit of the bee, to thus be pollenized. The nectar is sought by the bee as food, and as well a portion of the pollen. The bee in the act of gathering these substances not only aids in the pollenization of the blossom on which it is at the instant, but passing to other blossoms with the pollen dust upon its body produces cross-fertilization. The stock-man knows well what crossing means in the animal kingdom, and the horticulturist gets the same thing in the botanical kingdom by the transfer of pollen.

But you want more than mere assertions before you are convinced. This institute could not have done better than to have had a lecture by Prof. Crandall, the botanist of the Agricultural College, showing and explaining by charts all these points The State Bee-keepers' Association once had such a lecture by Prof. Crandall, and it was most instructive indeed. He told us there are certain plants that depend exclusively upon insects for distribution of the pollen. Others are not wholly dependent upon the insects, but receive help from the winds. Again, others are self-pollenizing. Upon the whole, very few plants exist that are altogether independent of outside help in this matter.

Almost all our fruits, except the strawberry, have both sexes in the same plant, and almost the entire list depend very largely upon the bee to transport the pollen from bloom to bloom. So great is this dependence of the apple, peach, pear, plum, cherry, and such fruit, that a crop from these can scarcely be expected unless the bees have access to them. The cherry will make almost an entire failure of fruiting unless visited by bees.

The experiment station in Florida selected two peach-trees; one was protected from insects, the other was left exposed. Both set fruit; but when the pit, or seed, of the fruit was forming the protected tree dropped its fruit, but that of the exposed one matured.

It is now well known by many, that, should cold weather prevail during fruit-blooming, thus keeping

the bees at home, the crop will be very materially decreased as a result, and, as before indicated, the cherry will be almost an entire failure if insects can not reach the bloom. Last year two prune-trees in my apiary, with bees under and all about them, bloomed for the first time. Considering the killing frosts of last spring I thought it doubtful if I should get even a sample of fruit; but it seemed that almost every blossom gave a prune.

Clovers of all varieties are aided in the same manner by the bee. The blossom-cups are so deep in the red clover that usually the common bee can not reach the nectar, and do not work this variety; hence it depends mostly upon the bumble-bee. Australia had no bumble-bees; and when they planted the red clover there it would not seed because of lack of fertilization; and to remedy this they imported those bees from this country, and all went well thereafter. Cut open a lopsided apple, and in the undeveloped side you will find no seed. The undeveloped part was caused by a lack of fertilization on that part of the bloom.

FASTENING FOUNDATION IN FRAMES.

Dr. Miller:—I see in GLEANINGS for Dec. 15 an article about sticks in frames for fastening the foundation. 1. Please let me know the size. 2. Will these answer for extracting without any wire in frame? 3. In speaking of the engraving under No. 1, "half bottom not yet nailed on," does this mean that there are holes in top and bottom bars for insertion of the sticks? 4. How are the sticks imbedded in the foundation? 5. Which foundation, "medium or light," is best?

Ashland, Ore., Jan. 23. W. C. MYER.

1. The length is ⅛ inch less than the inside measure from top to bottom bar, and the sticks are $\frac{1}{16}$ inch square. The reason for having the sticks ⅛ inch shorter than the space between top and bottom bar is that it is easier to handle the shorter sticks in putting them in; and, besides, basswood (of which timber the sticks are made) increases in length as well as thickness when it swells, and when the wood is thrown into boiling wax I think it likely that it increases in length.

2. Yes. I extracted about 300 pounds from such combs that had been built the same summer, and there was no trouble.

3. No. The sticks do not necessarily touch either top-bar or bottom-bar, and there are no holes to let them in. The object of having the bottom-bar in two pieces is to allow the foundation to go between the two parts The foundation is cut ½ inch wider than the inside depth of the frame. That allows ¼ inch at the top to go into a saw kerf in the top-bar, and ¼ inch at the bottom between the two parts of the bottom-bar. The foundation is cut so as to make a close fit to the end bars at each side, the frame is put on the board, such as is commonly used for putting foundation in frames; the foundation is slipped into the saw-kerf of the top-bar, and then the second part of the bottom-bar is put in place, a single small wire nail is driven at the middle to fasten the two parts of the bottom-bar together, and then the remaining nail is put into each end of the bottom-bar. Top-bars and end-bars are 1⅛ inches wide, and each part of the bottom-bar ½ inch wide. That allows ⅛ inch between the two parts of the bottom-bar for the foundation.

4. If you put in the dry sticks, the bees will gnaw them out every time. Put a little bunch of the sticks in melted wax, keeping the wax where it will stay hot. At first the air and moisture in the sticks will make a great frothing, and you will not imbed any till all settles and becomes clear. Then with a pair of tweezers, or something of the kind, lift a stick out of the wax, lay it in place, and press it into the foundation with a presser made of a little board about as long as the sticks, or not quite so long, and about ⅜ inch thick. The edge that presses in the sticks must be kept soaked in water, so the wax will not stick to it. Five sticks are used in a frame, one about an inch from each end-bar, the other three at regular intervals. In rare cases I've had the bees gnaw at the sticks, even when cooked in wax, but I don't know why.

5. I have used rather heavy foundation (some I've had on hand for a number of years), but it may be that light foundation would do just as well. Certainly just as light foundation can be used as if wire replaced the sticks.

These sticks allow the combs to be built solid to the bottom bar (but sometimes the bees will dig under), and I know of no advantage in any way that the wires have over them.

Marengo, Ill. C. C. MILLER.

PERFORATED SEPARATORS, ETC.

1. I have a lot of wooden separators, and should like to know if it would be any advantage or disadvantage to bore ¼-inch holes through them so as to allow a passageway.

2. What do you strain your extracted honey through, and in what way?

3. About how often and how much do you feed an average colony to encourage brood-rearing?

4. Is there any advantage in having a bee-way on top of the sections?

5. I wonder how many put sections in a damp place awhile before folding, instead of wetting or steaming them. It goes ahead of either way if you do it right.

WALTER GARABRANT.

Mendham, N. J., Mar. 28.

[1. Separators with perforations in them are better than those that are plain, I believe. I would suggest that you try a few supers equipped in this way: Half the super with plain separators, and the other half perforated. Note particularly the filling of the sections, and the rate of filling of the two lots.

2. We recommend an ordinary cheese-cloth sack, suspended under the mouth of the honey-gate.

3. About half a pint of syrup daily is considered a very good allowance for stimulative feeding.

4. There must be a bee-way in the top of the sections, provided the supers are tiered one above the other. Closed-top sections are used only when one super at a time is allowed on the hive; but if there is a good honey-flow and a big colony the bees work at a disadvantage when they have only one super.

5. A good many practice the plan; and I

believe it results, in general, in less breaking than where the grooves are dampened just before the folding.—Ed.]

HOW TO PREVENT SWARMING.

As soon as your bees get strong enough to show signs of swarming, get some combs and put an upper story on your hives (if not already on). Place a queen-excluder between the upper and lower story. Now put queen-cells in the upper story, with some two or three frames of brood up there, with an entrance at the rear end of the upper story. As soon as your queen has begun to lay, lift your upper story off; raise your excluder, and catch the old queen, and kill or do something with her; then put your upper story back without the excluder, and the work is done, and your hive has not been without a laying queen at any time; and my experience is, the young queen will not swarm, no matter how many bees you add to her hive. I think this the cheapest way to manage them.

Elmont, Tex., Feb. 7. J. F. Teel.

[This is an excellent way to requeen with young blood; and while a colony with a young queen is not as *liable* to swarm, perhaps, it would hardly be safe to assume that such colonies would not swarm. If you try the plan on a larger scale I think you will agree with me.—Ed.]

OLD-STYLE WIDE FRAMES; DOUBLE-TIER EIGHT SECTIONS.

I noticed an article in my last Gleanings, Feb. 1, written by Alfred Atherton, of Oramel, N. Y., referring to the old-style wide frames, and also noted the editor's objections to the same. I, like Atherton, prefer them to any other device for procuring comb honey. I have never found the objections referred to by the editor. I never use dummies to fill with—I always put on full top (48 sections). You speak of their being hard to get out of a hive. Perhaps you don't go at them right. Let me refer you back to Gleanings. June 1, 1898, p. 438, you will notice that the correspondent took 6000 lbs from 60 colonies, spring count, and asks if you would like to know how he did it. I will tell you the secret for him (I don't mind telling you). He used old-style wide frames, and says they are good enough for him. My wide frames are the same width as my sections (1½ in.), and I use plain sections and the fence separator, double tier.

Noble, Ill., Feb. 3. E. E. McCoy.

[Every one to his likes and dislikes.—Ed.]

NIVER'S EXPERIENCE WITH A BUZZ SAW.

Dear Friend Root:—As our friends the Quakers say, "the spirit moves" me to have a little chat with you this morning, as I am off duty, and away on a visit to a friend here in this city of prisons. Gleanings for Dec. 15th had not shown up when I left Groton yesterday; but the Dec. 1st number had an experience in it, page 880, on making hives by hand, that seemed to touch a tender spot in my memory, and a somewhat similar experience has left tender spots on my fingers and ribs, so it is natural to write it to you in order that you may relax your regular "editor Root" dignity of countenance and smile with me.

Since Morton's death I have been working in the shop with the machinery, and finding out how easily a stick will come back at your ribs from the saw; and although I haven't caught one yet on the nose, like that chap who saved 90 cts. by building bee-hives (or came out just even if putty isn't cheap in the spring), I did worse; for, in forgetting the old saw, "don't monkey with the buzz-saw," I learned that stopping a buzz-saw with my fingers isn't a success. It slashed into two fingers of my left hand—not so badly as it might have done, as it left bones intact, but bad enough to inspire a very wholesome respect for that same "hollow-ground cut-off."

Auburn, N. Y., Dec. 17. S. A. Niver.

WIDE ENTRANCES FOR HOT CLIMATES; SWARMING DIMINISHED.

I have been troubled very much every year from my combs melting. I used only a ½-inch entrance, whole width of hive, and my foundation and new combs would all melt down till this year when I blocked all my hives up on ⅞-inch blocks, and never lost a comb, and my bees seemed more at ease. There was not such a roar from them in fanning, but my bees are right out in the sun, and it would make quite a difference if they were under a shade. But I find the bees winter much better out in the open, and commence rearing brood earlier.

There was not a general good honey harvest here this year, although I made a rousing big crop of combs, nearly 150 lbs. per colony.

I forgot to mention my good "luck," if I should so term it. I had only two swarms to issue the whole season, from my home apiary of 125 colonies that I set up on the 4 ⅞-inch blocks. Swarming has been our greatest trouble in past years, some days having as many as 60 swarms. J. K. Hill.

Uvalde, Tex., Dec. 7, 1898.

THE TALL SECTIONS.

I see on page 127, Feb. 15, friend Aikin tells why sections with a *long* entrance are better. That is the kind I have been using for years, and you have been making them for me. Try them. Henry Wilson.

Clinton, Ill.

FOUL BROOD IN CUBA; WHENCE CAME IT?

Mr. W. W. Somerford said, page 82, that foul brood was introduced by D. A. Jones sending queens to Cuba. It is very probable that Mr. Pedro Casanova was mistaken in this respect, and that this assertion is unjust to Mr. Jones, because foul brood was spread all over Cuba long before this. Dr. Dzierzon, in Germany, infected his apiary by feeding Cuban honey in the year 1848, and lost nearly all his colonies. So it is very probable that, unknown to Mr. Casanova, foul brood was

introduced in his apiary from the neighborhood. L. Stachelhausen.

Converse, Tex., Feb. 9.

WOOD VERSUS TIN SEPARATORS.

"Please tell me your opinion as to the merits or demerits of tin versus wooden separators," writes a correspondent. "The reason I ask is that the modern super is not made wide enough to admit of wood separators, but tin can be used. Will bees store as much honey with tin as with wood?"

Answering the last question first, I think bees make no difference between tin and wood as to the amount of honey stored.

Aside from the matter of cost, durability, and thickness, the chief difference between separators of tin and wood is that, on account of the stiffness of the grain, wood easily remains straight and stiff lengthwise, and tin bends lengthwise. On the other hand, wood bends more easily than tin in the other direction, and, what is of still more consequence, the wood shrinks and swells, and tin does not. The result of these differences is that tin is the proper thing to use where the separators are held rigidly in place lengthwise by being nailed, and wood is better where separators are not nailed. Nail a wooden separator in place, and it will curl up in a very unsatisfactory manner. It will do better with a single nail at each end, but that is not entirely satisfactory. If you attempt to use a tin separator without nailing, it is very easily bent in the direction of its length, and it doesn't take much bending to throw it a quarter of an inch out of its proper plane, which means that a section one side of it will be a quarter of an inch too thick, and its opposite neighbor as much too thin.

You will then see that it will not do to substitute tin in a super designed for wood, and *vice versa*. But I don't understand what kind of modern supers you can have that are not wide enough for wooden separators. Your separators are hardly more than $\frac{1}{16}$ thick, and your supers are hardly less than 12 inches wide. That will admit six sections with their accompanying separators, providing your sections are not more than $1\frac{5}{16}$. Such wide sections are not much used now, and I think most supers for eight-frame hives are $12\frac{1}{8}$ inches wide, making it necessary to use a follower and wedge to fill up the vacant space when sections are $1\frac{3}{4}$. In any case, if there is not room enough for a given number of sections, one less across can be used, filling up the space with followers and wedges.

Marengo, Ill. C. C. Miller.

TRAVEL-STAIN; A THEORY AS TO ITS CAUSE.

My observations lead me to believe the main cause of travel-stain to be the clustering of very young bees on the combs. The warmth of the cluster and dejections of young bees discolor the cappings. That seems to explain why stained cappings are seldom found in queenless colonies or others having no hatching brood in them. To have sections finished by newly hived swarms, and removed before any young bees have emerged from the cells, I have found in my locality to be the best way to prevent so called travel-stain.

Jas. Comeau.

Henryville, Que., Jan. 26.

SWEET CLOVER; HOW TO GET RID OF IT, ETC.

Mr. E. Smith's advice to L. A. Sawyer in regard to getting rid of sweet clover is sound. It is just what they do here, and (I am sorry to say) they succeed. Sweet clover is termed a noxious weed in this locality. Street commissioners, road supervisors, and railroad-section foremen have strict instructions to cut it before it blooms. In this, however, they do not always succeed; but they do as a rule get at least the most of it cut before it can ripen its seeds.

As I saw this wholesale destruction I remonstrated vigorously, and I used A. I. Root's well-known phrase, "It will never trespass on cultivated soil, or any pasture;" but there I got my foot in it. I was shown places where it had got a rod or more into a pasture-field and also in meadow.

Will cattle not eat it? Yes, they do; but not as long as they have plenty of June grass; and by the time June grass is scarce the clover is too big. If the farmers would cut it only once, then the cattle would take care of it after the June grass is gone. A year ago last August my bees were storing honey fast, and it all came from the sweet clover. We had had some rain, which had started the clover anew. One day I went to Plasterhead, about 3 miles distant, and along the roads I saw a sight of beauty — the fresh green of sweet clover, and only 6 or 8 inches high, loaded with bloom, and my bees were fairly swarming on it. A flock of half-starving cattle and pigs tried in vain to get their heads through the fence and get a bite of it; but as I returned, three men were at work, cutting down the "noxious weed" that the starving cattle were not allowed to get a bite of; and next day my bees began robbing. I had 62 colonies, and might have got many pounds of honey had it been left; but it is a "noxious weed," and must go. Julius Johannsen.

Port Clinton, O., Feb. 7.

SWEET CLOVER IN THE SOUTH; QUALITY OF THE HONEY.

I see so many running down *Melilotus alba* that I feel like saying something in its behalf. It is the first of our forage-plants to come in the spring, and the last to be killed down in the fall. Stock eat it readily until it becomes rather woody, and even then eat the smaller shoots. We grow it for pasture, for hay, and as a honey-plant. We have no trouble whatever in getting rid of it here. Our greatest trouble is in keeping it set where stock is allowed to run on it. Melilotus being a biennial, we either have to keep stock off or resow every two years. It makes a rather thrifty growth on our thinnest soil, and even where the soil is washed, leaving the white limestone exposed, you will find our melilotus there by itself. We keep from 40 to 50 colonies of

bees, and almost our entire crop of honey is from this plant. Our extracted is *almost* transparent (that is, almost water-white), and of a splendid mild flavor.

My uncle (a nurseryman), from Southern Illinois, was with us during the holidays just past. He was something of a bee-keeper until foul brood got a start in his yard last summer while he was sick, and left him nearly beeless. He pronounced our melilotus honey as good as the best. We usually sell all we get here at home, and have none for sale now. Hence it can not be said that we have an ax to grind because we praise it, but because we think we have a valuable forage and honey-plant in melilotus. L. H. GOULD.

Crawford, Mass., Feb. 1.

THOSE IDEAL PLAIN SECTIONS; BETTER FILLING.

I was fortunate enough to secure through Lanetter & Co., Sydney, 1000 of your Ideal sections and some fences; and although we are having a rather poor honey yield I have managed to get some of them filled, and I must tell you that all I have shown them to consider them far ahead of the square section so far as pleasing the eye is concerned, and that has a deal to do with the selling of a honey or other crop. One of my best retail customers in the city of Brisbane remarked on being first shown them, "Yes, they are much nicer," subsequently labeling, "This season's comb honey; perfection." The bees seemed to fill them more readily, doubtless because of the freer communication afforded by the fences. J. M. MITCHELL.

Glenhope Farm, Indooropilly,
Queensland, Aus., Jan. 2.

COLOR OF CAPPINGS DEPENDENT ON SEASON.

I have noticed that honey capped during a good flow is generally whiter than that capped when honey is scarce, and this Mr. Crane partly acknowledges; for he almost says that the upper part of a section is capped white because honey was coming in plentifully, while the lower portion was darker, because honey was then coming in slowly; and in another case the middle portion was dark because it was capped between two good honey-flows. Has Mr. Crane ever bleached eight sheets of foundation and placed them in a hive when honey was coming in? I have done this, and the combs have been as white as snow. My reasoning on the matter is as follows:

Wax, as produced by a bee, is snow white, as every one knows, and during a hasty period of comb-building the combs will be pure white; but should the bees have the time and labor to spare, then they color the wax to correspond with their surroundings; hence a new comb built adjoining an old dark comb will, under ordinary circumstances, be colored by the bees, so as to keep up as much as possible a uniform appearance within the hive. Take another instance:

Place a white and a black comb in any brood-chamber, and see if the bees don't color the cappings to correspond. So you see my theory in reference to getting white comb honey is that we must give white foundation and keep every thing within the hive as white as possible, and try to have our honey capped during a rich honey-flow. These things may be difficult to control; but if we know the cause for certain, then we can avoid many a mishap. Can not any observer of nature verify what I have said, when we find so many insects coloring their nests or eggs to correspond with adjacent articles? and has not nature made many an insect's color to correspond with its home? If you take a frame of old dark comb and cut off a portion, and place it in a hive, won't the bees color the new wax to correspond, where the old and new unite? But as honey comes in quickly after they have started to build, they run off to pure white at the remaining portion of the comb. I have not noticed particularly, but I dare say that bees will cap dark honey with darker cappings than they do white honey, if there is not a heavy flow on at the time. Ask Mr. Doolittle the color of his queen-cells built on light and dark combs.

JOHN R. V. BRAHAM.

Ewarton P. O., Jamaica, March 6.

LARGER QUEEN-CELLS.

In reply to an article I saw in GLEANINGS to-day, with regard to rearing larger queens in large-sized cell-cups, I will say that my experience has not panned out that way. I find that bees will always contract the edges of the cell-cup, no matter how large the base; or they will expand the base and then contract as the cell is drawn out, even in worker or drone cells. I have experimented with this plan, but could see no difference in queens. A queen-rearing colony depends largely upon this condition. J. D. FOOSHE.

Coronaca, S. C., Jan. 4.

AN OLD FRIEND IN A NEW LOCALITY.

I have just landed here 200 miles north of Newhall, with all my bees, help, and appurtenances, to run two apiaries and a home. My! what a job! Every hive carried safely, and here we are in the midst of alfalfa fields, with melting snow in sight on the Sierras, flowing water over the fields, and leaving us all the large carp and trout on the grounds that we can use. R. WILKIN.

Famoso, Cal., Mar. 30.

IS HONEY A VEGETABLE OR ANIMAL PRODUCT?

Will you please tell us whether honey is an animal or vegetable product? And are the molecules in honey of the same nature as those in the nectar of flowers?

HERBERT L. MCLALLEN.

Trumansburg, N. Y., Jan. 31.

[There is a difference of opinion as to whether honey is a vegetable or animal product. Strictly speaking, it is of vegetable origin, and should really be considered such; but the bees do nevertheless change the nectar of flowers, a vegetable product, into honey that has other

elements placed therein by the bees during the process of ripening. The nectar of the flowers is not the same as honey.—Ed.]

"HE;" THE IRISHWOMAN'S CALF.

I want to tell Bro. Hasty a story in support of using the pronoun *he* on all occasions, and without regard to sex. An old Irishwoman lives near us, whom we all call Aunt Mary. She is quite old (she does not know how old); can not read or write, is very energetic, and a great talker — surely a good "household" authority. She keeps a cow, a pig, and chickens. A year ago last summer her cow raised a calf that gave her a great deal of trouble. On one occasion "he" wound her up in the rope by which she led "him," and trampled her severely. Said she, "I thought sure an' he would kail me, and all I could do was just to say, the Lord have mercy! and he jist kept a pullin' at the rope." And again, she said, "I want to sell him. He's a nice calf. He's a heifer."

With this Mrs. B. came near going head first into the wash-tub over which she was standing, in her effort to keep back the laugh. You see she had not learned the rules of literature yet.

Now, Mr. Editor, Mrs. B. has it in for you just a little for what you said on p. 82 about associating "she" with "softness," for she says some of the softest things she ever saw were two-legged animals in the shape of men, and she has seen women just as "smart" as their brothers or husbands. Of course, she makes no allusion to her husband or to you either. J. W. Beauchamp.

Hatfield, Mo.

[Aunt Mary was fully justified in using the pronoun *he* when referring to her obstreperous heifer. As I said, I associate with the pronoun *he* smartness and wickedness; and if that calf did not possess those qualities, then he should have been called *she*.

Yes, I know there are some men who are quite feminine in their general make-up, and I should be inclined to refer to them as *she*. There, I had better not say any thing more, lest I get into trouble —Ed.]

SELLING HONEY; SOME OF THE PLEASANT FEATURES OF THE BUSINESS.

Soon the time will come to dispose of the crop of honey we shall have been able to secure, and, at the same time, develop the home market. After I had traveled over my usual route last fall, one warm sunny day I went in a new direction. While enjoying the warm sunshine of a beautiful fall day, having driven about three miles I espied a man pulling turnips. I left the team and went to him and inquired if he would like some honey. His reply was: "Wall, now, yes. I would like some honey; but you see times are hard and money is kinder scurse, and farm stuff don't fetch much; so I guess I'll have to do without it."

I had quite a talk with the tiller of the soil, and it ended in my selling him eight one-pint jars of extracted honey. I took my pay in turnips.

The next place I called at I took an old sewing-machine, and I will endeavor to make a section-cleaner out of it.

In this way I passed a most enjoyable day in disposing of 300 pounds of extracted honey and 100 pounds of comb.

There was one little incident which pleased me more than all else. At the last place I called, there were some children. The mother said she would like some honey if she had any change. One of the little girls asked me if I would give them some honey for some guinea pigs. Well, I could not refuse the little tot; and so, in exchange for a pair of the guinea pigs, I gave her a pair of rabbits and some honey, as she thought the pigs were worth the rabbits and honey together.

When I got home I had a mixed wagonload consisting of turnips, eggs, beets, a sewing-machine, a calf, a pair of guinea pigs, and $16 in money.

Why is it not as well for the producer to exchange his product with those he deals with? Perhaps it is not convenient for all to do so; perhaps others would or could not get the enjoyment out of such a day's work as I do. The pleasure that the little girl got from the exchange of the rabbits and honey for the guinea pigs was worth more to me than all the money I received. I gave the pigs to another little girl, and she was made happy.

Charlton City, Mass. Geo. L. Vinal.

MILLER'S RACK FOR HAULING BEES; HOW TO MAKE IT.

Dr. Miller:—I can not get as much from the photo in Gleanings as to construction of your rack for hauling bees as I should like. Could you make a diagram? What are the dimensions of the two pieces you build on? Do you make the under side, or floor, close. How fasten top pieces to the frame? How fasten the hives to prevent toppling over?

Steel Creek, N. C., Jan. 18. A. L. Beach.

I'm afraid I couldn't make a diagram that would add much to the idea you get in the photo; but I think that, by answering your questions, I can give enough information to enable you to make a rack. Its advantage is that, at a very small expense, you can make one to fit any wagon you may happen to have. It is no doubt better to have a wagon with springs, but that is not absolutely essential.

Answering your questions in order, the two pieces I build on are fence-boards 4 inches wide, but that's nothing to you; they must be just what the wagon requires. The under part of the rack, or floor, is not close. The top pieces are nailed on with 2½-inch wire nails. The hives are not fastened on at all.

Now I'll try to answer more in detail. You are supposed to start with a common wagon-box. Make a frame after the usual manner of making a wagon-box deeper, having it of such depth that, when put on, it will make your box just deep enough to take in your hives, for you will want to fill your box with hives before putting on the rack. Your rack may

just as well be two feet or so longer at the back end than the wagon box, so it will hold more hives, and you can reinforce your frame at the back end by nailing on pieces at the side; otherwise the hives might break down the part that proj cts. Cleats after the usual style must be nailed on the outside or inside of your frame to keep it in place on the box.

Now take fence-boards 6 inches wide, and cut into lengths about 7½ inches longer than twice the length of the bottom-board of your hive. If your bottom-board is 22½ inches long, as mine are, then your boards must be cut 52½ inches long. The number of these boards must be one more than the number of hives you will have on each side of your rack. Now distribute these boards on top of your frame, spacing them at equal distances, so that the space from center to center shall be 1⅛ inches more than the width of the bottom-boards of your hives. Nail them on. Take a board 4 inches wide and the whole length of your rack, and nail it on the top of these cross-boards centrally. That's to keep the two rows of hives apart. On each side, to keep the hives from sliding off, nail a strip an inch thick and 1⅛ inches wide. To keep the hives in their places sidewise, nail on the center of each board, and, running in the same direction as the board, a strip about 18 inches long and ⅞ square. Of course, these strips may be more than 18 inches long, but there's no advantage in it. At the front end and at the back end, instead of having this strip at the center of the board place it on the outer edge and space the boards accordingly. For lighter handling the rack may be made in two parts, as is the one in the photo.

The hives are loaded in the wagon-box, running crosswise, and between each two is placed a stick ⅞ inch square, and as long as the inside width of the wagon. Thus the hives are held firmly in their places. Then the rack is put on and filled. C. C. MILLER.

Marengo, Ill., Feb. 23.

EATING A POUND OF HONEY AT A SITTING; 4×5 VS. 3⅝×5 SECTIONS; A POINT FOR PLAIN SECTIONS.

Mr. Editor:—Since reading what Stenog says in GLEANINGS, p. 79, in regard to eating honey, I have wanted to tell of a little circumstance that happened in this neighborhood. Two fellows on their way blackberrying called at my apiary and bought two well-filled 4×5 sections of honey, and took them along to sweeten their noonday lunch. We afterward found the pieces of the sections, and the fellows admitted they ate it all at the one meal. They said they would not if they had thought before cutting into them; but after cutting, the honey leaked so they had to eat it to save it; and the strangest part of it is, they claim to have felt no discomfiture from it.

I was much surprised at Mr. Crane's finding the 3⅝×5 sections so poorly filled (p. 125), as I tried a few of them last season, and they were much better built out to the wood than my 4×5 beeway sections on flat tins without separators. They were all filled out almost exactly alike, much better than the one shown on page 126, but I was disappointed in their weight. One 12-lb. case weighed 11¾ lbs. One lot of about 70 lbs. averaged 14⅓ ounces. I should much prefer to have sections weigh an even pound. I find, in using sections without separators during a light honey-flow, the bees are very apt to fill all the sections one-half or two-thirds full, while with fences they fill what they do work in, and leave the rest comparatively untouched. EARL Y. SAFFORD.

Salem, N. Y.

[Most markets prefer sections weighing a little under a pound. The 3⅝×5 is not intended to hold quite a pound.—ED.]

PLAIN SECTIONS COME TO STAY.

I notice Doolittle gives you a "raking over" in the *Progressive*, regarding plain sections, etc. Never mind. "They laugh best who laugh last," and you can afford to let them laugh now. The plain sections and fences are come to stay; and my regret is that I did not order all of that kind last season instead of some of the old kind. I wanted to go slowly, as some would say; but I am going faster now. I took up 1500 of the old kind to the mill, and cut them down so that they will take the place of no-beeway ones. I had them done in the jointer, and it was not a very big job either. Common sense is on the side of the new section. G. A. DEADMAN.

Brussels, Ont., Mar. 16.

G. U. U., Mo.—Sometimes colonies under very adverse circumstances will winter very nicely, and those under favorable conditions will winter poorly; but as a rule, colonies in double-walled protected hives winter far better than those in single-walled.

L. A. S., N. Y.—Stimulative feeding can be practiced now at any time—the sooner the better. In general, bees should not be fed during cool nights. About half a pint of syrup fed daily, or even a less quantity, will start brood-rearing going at a good rate; but hives should be well packed and well protected if the weather is at all cool; otherwise there is liable to be a chilling of the brood during a sudden change of weather.

W. W. S., N. Y.—We have no real preference between the super for holding 4x5 and that holding 3⅝x5. The preference will be based somewhat on the fact of your using an eight or ten frame hive. If the latter, then the Danzenbaker super would be more convenient. If the former, then the Ideal would be the one. The 4x5 sections in some markets may be a little more salable because, for the same weight, they look larger; but either section sells well. In New York, at least, tall sections are coming rapidly into favor, and it seems it will be only a question of time before the 4¼ square will be shoved out of the New York markets.

Continued warm weather is bringing a smile to many a bee-keeper.

Our 251 outdoor chaff-packed colonies are all alive except 16; but a good many of the survivors, I am sorry to say, are somewhat weakened.

A PECULIAR SPRING.

I do not know how it has been with you, friends, but with us the cold March winds have continued on into April, and it was only yesterday, the 10th, that we had it really warm enough for the bees to fly; but it is encouraging to note that the weather is gradually moderating. There seem to be no fits and starts about it this year. Almost every spring heretofore, so far as I can remember, we had some very warm days followed by some that were decidedly wintry, one extreme following the other; but this spring it has been one cool or cold streak almost continuously. We now expect better weather. *So much* cold ought to bring warm.

WING-CLIPPING; CREDIT TO WHOM CREDIT IS DUE.

From our recent foreign exchanges it appears that I am the sole promulgator and originator of the practice of clipping queens' wings for the purpose of more easily controlling swarming. Not only this, but they have been making out that I began the practice forty years ago—three years before I was born. Why, my dear friends across the big pond, it is only very lately that I have become a convert to the practice; and it was then only when it had been hammered into me by bee-keepers more practical than I — yes, by bee-keepers who practiced wing-clipping, I was going to say, almost before I ever saw the light of day. While the practice is not entirely universal in this country, it seems to be general with very many of our best bee-men.

THE EFFECT OF THOSE RAINS IN CALIFORNIA.

In regard to this the following note just received from Mr. Martin, who is keeping us posted, will explain:

I wish to make a little further report upon the honey prospects for this portion of the State. The majority of the bee-men think that the rain came too late to be of material benefit. However, it came early enough to save thousands of colonies of bees. There will be enough honey gathered to tide the bees through, and perhaps a little surplus may be gained. This may be particularly the case near the coast; and from the appearance of honey-plants near my own apiary I am in hopes of getting something of a honey crop. The black sage is very plentiful, and it is making a good growth. It will be a little later in blooming, but will surely yield some honey. At this date the bees are getting honey from alfilaria and the California walnut. My bees are quite strong, and ready for any nectar that comes along. In and near Pasadena, where the bees have access to orange bloom, I learn that the bees are swarming; therefore the bees are hopeful themselves. I have great faith that we near the coast shall have a fair honey crop; at any rate I will stay in Southern California and try it.

J. H. Martin.

Shermanton, Cal., April 4.

WINTER LOSSES UP TO DATE.

Reports are still coming in, showing winter losses here and there over the country, and it begins to look now as if the mortality would be greater than in any other year unless it was during the winter of 1880–'81, when the losses were greater than ever known before or ever will be; but at that time the correct methods of wintering were not as well known as now, and it is not possible that the loss will be any thing like as severe. But very fortunately the severe losses are by no means general. In one section of Michigan, where there have been heavy snows, there is a general report that the bees have wintered nicely, when a year ago there were very heavy losses. In Indiana the mortality has been great. In New York the bees have wintered fairly well, because in that State bees are generally wintered in the cellar; or if not in the cellar, those on summer stands have been well protected by heavy snows.

The peculiarity of the past winter was that zero weather was not confined entirely to the North. Even as far south as Texas there was considerable zero weather as well as in other portions of the South. The general unpreparedness of the bee-keepers for such extremes will make wintering losses in the South as great, perhaps, as in the North. Here at Medina, at this date (April 12), the weather is growing daily more mild, and we hope the worst is over.

BLEACHING THE SURFACE OF TRAVEL-STAINED COMB HONEY.

I have often wished that there was some method or process by which we could take the ordinary travel-stained comb honey and whiten its surface by bleaching or washing. Tons of first-class honey — the very best in the world—is travel-stained. It is well filled out, even in surface, and in quality the very best; but it must sell for a cent or two less a pound, simply because it is travel-stained. If by some simple process these soiled surfaces could be cleaned or bleached white, or nearly white, it would make a difference of hundreds of dollars in the bee-keeper's profits in a single season. It would be a great boon to the commission men, because a "good-looker" always sells more readily than a "poor-looker."

I received a note from Mr. Byron Walker, who seems to be very confident that he has found a process that will accomplish this result; and as soon as he gets over his rush—for he is indeed a very busy man—he proposes to tell the readers of this journal the *modus operandi*. I wrote him that, if he had a successful method, he had made a very important discovery. In answer he expresses his confidence in the method, stating that it is so simple he wonders nobody ever thought of it before. Indeed, he is rather of the opinion that some one must have known of it.

What good, you may say, is all this without

knowing the method? In the first place, I wish to find out whether some one else has a plan; and in the second place I wish to draw attention in advance to the importance of such a discovery and its value to bee-keepers generally. A good thing should be heralded in advance.

NO-DRIP CLEATS FOR SHIPPING-CASES; HOW WIDE AND THICK SHOULD THEY BE?

WHEN we first put out what we called the no-drip shipping-case—a case that has a paper tray in the bottom, and cross-cleats just thick enough to raise the sections off from the paper, we made the cleats ¼ inch thick by about ⅝. They were made thus for about a year; then there came a general clamor to have the cleats made thinner. Accordingly the following season, and even up to the present time, we made the no-drip cleats ⅛×⅝. Henry F. Hagen, of Rocky Ford, Col., instead of nailing these cleats in the bottom of the case, smears a little honey on the under side of the cleat, and simply lays it on the paper, spaced a proper distance apart. Of course, it is well known that honey is almost as good as glue when used in this way; and *because of this very fact* arose the necessity of a cleat to raise the section off from the paper. But very lately one of the most extensive honey-buyers in the United States, Byron Walker insists that it is a great mistake to have the no-drip cleats less than ⅜ thick; that those only ⅛ thick are not thick enough to prevent honey from coming in contact with the bottom of the sections when there is very much drip. As he speaks from the standpoint of a producer as well as from that of a buyer, it may be well to consider whether we were not wrong in changing from thick to thin cleats. There is this to be said in favor of the thinner cleat: It is quite thick enough providing honey is attached to the wood of the section as it should be; but much of the honey that was sent to market early last season was in sections that were only partly filled and poorly attached. In consequence there is a large amount of drip, and this will not be taken care of by the ordinary thin cleat.

From the standpoint of a manufacturer we desire to please our friends and customers; but before we make a change again we must have a general consensus of opinion favoring either the thick or the thin cleat; and this opinion should come from both the honey-buyer and the bee-keeper, not forgetting the commission man, who has unlimited opportunity for observation.

HOFFMAN FRAMES, AND HOW TO HANDLE THEM.

A VERY interesting article on this subject appears in the *American Bee Journal* for April 6, from the pen of our old friend and correspondent C. Davenport, one of the most practical writers in all beedom. He has come to be recognized as such by the fact that his communications appear in nearly all the leading bee-journals. In the article above referred to he says: "I consider self-spacing frames of some kind (if hives have to be moved to and from out-yards) as the only kind worthy of being considered; and even if hives are to remain in one yard permanently, I think self-spacing frames are far superior to loose-hanging ones." Of Hoffman frames he says that, after having tried a great many other kinds, he greatly prefers them to all others. He says further, "I do not think there is any locality where propolis or bee-glue can be much worse or more plentiful than it is here."

The main reason for his success in the handling of these frames he attributes to a simple tool which he uses. It consists of a piece of steel 1½ inches wide by about ¼ inch thick. It is spread out and drawn down thin at one end. The other end has the width reduced, and is formed into a hook.

In comparing the rapidity with which he could handle colonies on Hoffman frames, and those on loose or unspaced frames, a visitor who timed him gave him a record of 1½ to 2 minutes per colony on Hoffman frames, and 3 to 4 minutes on loose-hanging frames. He attributes this difference in results to the fact that the self-spacing frames can be shoved together *en masse*, while the other frames must be placed carefully in position *one at a time*.

That was about my experience when I first began to push this frame into prominence as long ago as 1890—a frame that was then well known, and was some twelve or fifteen years old at the time I began to tell about its merits.

At one out-yard, in 1891, I had about half the colonies on hanging frames, and the other half on the Hoffman. I ran both sets of frames together until I made up my mind that I could save time by transferring all the remaining combs in hanging frames into the Hoffman.

One feature that Mr. Davenport does not touch on is the facility that one has in handling Hoffman frames in groups, three or four at a time. I scarcely ever manipulate a colony on these frames without handling the frames in pairs or trios. I may possibly remove one frame of the division-board; then if I desire to form a nucleus I lift out three frames, leaving them stuck together just as they were in the hive. If I wish to get at the brood I may lift out a pair of frames from the center of the brood nest; scan the brood surface exposed, and as soon as I have satisfied myself I insert the frames in their position. Two shoves with the pry or tool crowd all frames back into their exact position, there being no fingering of individual frames. But this result can not be achieved without a good tool; and the one that Mr. Davenport describes is the one that, according to my experience, is proving most satisfactory, all things considered. Early last fall we intended to list such a tool in our catalog, but we overlooked it; but we hope to have some ready very soon now.

Mr. Davenport seems to favor Hoffman frames with square edges. I tried the frame the first season with such edges; but after I had tried them with a plain V edge I decidedly preferred the latter; but I should like to see reports from those who have recently tested the two side by aide.

For there shall arise false Christs and false prophets, and shall show great signs and wonders; insomuch that, if it were possible, they shall deceive the very elect.—MATT. 24:24.

In one sense Christian people ought to feel encouraged just at this present age from the fact that so many are holding, or at least claiming to hold, Christ Jesus as Lord of all. I can very well remember when the idea that Jesus could heal or would heal now as he did in olden time would have been ridiculed, not only by unbelievers but perhaps, also, by a large part of Christian people and church-members. Now not only Christian Science people but even patent-medicine men and venders of humbug apparatus for healing disease claim that they are in line with Bible teaching and divine healing as in olden times. I have called attention to the fact that bad, vicious, evil men succeed in getting money from sick people by making believe they can heal in answer to prayer or similar ways. The world is now flooded with so many claims in this direction that it has brought to my mind vividly the text I have quoted at the head of this talk. "False Christs" and "false prophets"—why, one is literally bewildered by the multitude of them; and the most perplexing feature of the whole business to me is that it seems as if there were gradations *all* along, bridging the way between genuine faith and downright hypocrisy. Our text tells us they shall show "great signs and wonders," and that they shall, if possible, "deceive the very elect." Well, if this is true then I need not feel greatly worried if they do perplex and bewilder my poor self. But, dear friends, I do believe that we may sift the chaff from the wheat, especially if we are standing close by and holding fast to the dear Savior's strong arm. It is with a hope and a prayer that I may pilot some poor soul out of the darkness and into the light that I undertake to talk with you this morning. Let me first submit a letter from a bee-keeper:

Friend Root:—I happen to know something about the case of Henry W. Imler, mentioned in the item on page 237 of GLEANINGS. I was at Zion Home the week he was healed It was Christmas week, 1897. I heard him say twice, publicly, the following, once on Saturday before the guests in the assembly room of Zion Home, and once on Sunday before the congregation in Zion Tabernacle:

"I came to Zion Home Monday morning with smoker's cancer, located on the back part of my jaw, and extending downward into the throat. It was as large around, and as long, as my thumb. I heard the teaching the same day. Dr. Dowie laid hands upon me in the afternoon. In the night I awoke strangling. There was something in my throat. I could not raise it, so I swallowed it. I felt for my cancer. It was gone. It had dropped out while I was sleeping, and I swallowed it. I am also healed of the tobacco habit of 56 years' standing, and of the morphine habit of 35 years' standing. I have no further desire to use them."

Mr. Imler was a merchant in Fremont, Ohio, and appeared to be a bright, resolute man, and appeared to know what he was talking about. Dr. Dowie makes no charges for his services. Mr. Imler was there only one week. He would pay $10 for his board and room. If he paid any thing more he did it of his own free will; so I think Dr. Dowie did not "line his pockets" very deeply.

I think Mr. Fletcher's estimate of not one in ten being healed is very low, when you consider that from 800 to 1000 will arise in an audience in Zion Tabernacle and testify to their healing.

You seem to be under the impression that Dr. Dowie prohibits the use of meats. He does not. You will find meat on his tables every day in the week. He draws the line on swine's flesh. If you read all the reports about him you will not know what to believe. If you want to know the truth about him I would advise you to go to Zion Home and see and hear for yourself.

May the Holy Spirit take away all prejudice, and lead you into all the truth. D. I. WAGAR.

Flat Rock, Mich., March 22.

Amen to your concluding sentence, friend W. Permit me to say to our readers that the above testimony comes from a bee-keeper, and without doubt he is an unbiased witness. It gives us light on the subject in many ways. First, Mr. Imler was a victim, not only of the tobacco habit,* but of the morphine habit also; and if the work at Zion's Tabernacle was the means of delivering him from the power of Satan on these two lines we may all rejoice and praise God for it, even if he did die soon after his return home. It is a thousand times better to die with faith in God than to live in bondage to such evil habits. A man in our town, who had reformed so many times that everybody had lost faith in him, finally took a decided stand and held to his religion. A year or more afterward he was at the point of death, and his friends hesitated to tell him; but instead of being frightened or even disturbed, he said in substance, "May the Lord be praised! If I die now I shall die an honest and temperate man, trusting in Christ Jesus; while if I were permitted to live longer I might after all fill a drunkard's grave." I have been informed from another source that Mr. Imler died the death of a Christian over a year *after* the healing.

Now, in indorsing the above please bear in mind, dear friends, that I do not mean to say Dr. Dowie makes no mistakes. He is human; and I presume that, if we were to undertake to show him up on his worst side, we might make quite a charge against him. But would either you or I stand such a test? If somebody should undertake to write up all of my mistakes and inconsistencies, and ingeniously arrange it, even if he confined himself to facts, it might make a very sad showing. Dr. Dowie has certainly been instrumental in delivering thousands from the dominion of stimulants, evil habits drugs, and the foolish and useless dosing with stuff that does no good, even if it

*Mr. Imler not only stopped the use of tobacco, but, instead of disposing of the stock on hand, so that somebody else might use it, he made a public bonfire of it. See the following, which I clip from a recent number of *Leaves of Healing*, written by the Presbyterian minister of Fremont, O.:

Dr. John Alex Dowie. Chicago, Ill.

DEAR SIR:—Mr. Henry W. Imler, of our city, desires me to write you, and say that on yesterday he burned all the tobacco he had on hand in his store, of which fact I was a witness.

He has thus fulfilled his word of promise to you and to God.

Thus far he stands as a free man, not having touched tobacco or morphine since his return from Chicago.

He says he has no desire for either

He attributes his deliverance to the Lord Jesus Christ, to whom he ascribes the praise.

I have perfect confidence in Bro. Imler, and believe he is finally and forever done with tobacco and morphine, after a bondage of more than forty years. Yours truly,

Fremont, Ohio, Jan. 11, 1898. (Rev.) A. G. LANE.

does no harm, and our nation owes him a vote of thanks for so much. I am glad he has succeeded in building that great tabernacle, and in getting that great following.

After the above was written the following came to hand in a private letter:

Dowie's literature has been mailed to me, filled with blasphemy, and condemning all Christians, and all creeds but Dowie's. Two wealthy neighbors of mine went to Chicago and placed themselves under Dowie. He soon ascertained their wealth, and requested that they give the greater part of it to the "cause" (Dowie). This caused the scales to fall from their eyes, and the mask from Dowie.

The above seems to give us a glimpse as to where the great sums of money needed to build Zion Tabernacle came from. Of course, there are different ways of looking at this matter. If those who have been helped by his teachings feel disposed, out of the gratitude of their hearts, to give him aid, surely no one should object; if, however, he is deluding and deceiving, and leading people away from established churches, then he should most certainly be shown up and exposed.

On page 595, Aug. 1, 1898, I made some extracts from a paper published in Little Rock, Ark. Another issue of a recent date is at hand from which I make the following extracts:

Don't forget that the Spirit has fixed my terms for treatments at from one to ten dollars per month for each patient. These treatments are spoken in the silence every day for all manner of sickness of body and mind. I treat for success in business, love, and every thing you desire for health, happiness, and prosperity.

I Am Christian Science; therefore, when Mrs. Eddy talks about Christian Science she is talking about *Me.* Before Mary Baker Eddy was, I Am. See?

Now, friends, one would hardly think it possible people would send money in response to such assertions, especially from a man who admits that he gets drunk when he feels like it, and thanks God for whisky, right out in his journal. Now please read the extracts below, from a kind letter I have just received:

Mr. Root:—I have been thinking, ever since I read your opinion of Mr. T. J. Shelton, which appeared in GLEANINGS last summer, that I would write you a few lines giving you my opinion of him. I know you were sincere in what you said about him, and felt it to be your duty to warn people against him; but I know, and have personal evidence, that he can cure some diseases, if not *all.* I procured T. J. Shelton's address, and wrote him just what I wished to be treated for; and the very day he *received* my letter my trouble ceased. I have been, until within the past three years, a missionary Baptist; but since I have been earnestly studying Mental Science the Baptist doctrine looks unreasonable to me, as does all orthodox doctrine —not that I think there aren't good people in all churches — far from that. We *know* from reading your Home Talks, that you are trying to live a true Christian life. I hope this will be read with as kindly feelings as it is written. For fear you may feel insulted, and ridicule me, I sign myself A FRIEND.

Roseville, Ill., Mar. 31.

P. S.—I will send you a little book called "Finding the Christ in Ourselves." I hope you will enjoy reading it.

Now, then, the puzzle is, how can one who writes a letter like the above, and who seems to be downright honest and sincere, believe for a moment that this Shelton, with his intemperance and unblushing audacity, can heal diseases? Nay, further; he heals people hundreds of miles away, and the healing is done (without medicine or any thing else) as soon as he reads the letter describing the malady. When Jesus healed the nobleman's son by simply speaking the word, the people of that day were greatly astonished; but now we are told a wicked man succeeds in getting money for doing something more marvelous, and people believe in him. Before considering this matter further let us take still another case.

Mr. Root:—I mail you a circular, issued by Dr. Carson, of Kansas City; and inclosed with this letter you will find a piece of tissue paper that I shall mention further on. I wish to inquire if you know any thing about Dr. Carson. Why I inquire is, a lady friend of mine has just taken what he calls a month's home treatment by him, and has received no benefit from it. She has been a great sufferer from paralysis for the last three years. She is discouraged, having tried so many things that have not helped her. She said she had tried Electropoise, and was about to try Oxydonor when she heard of Dr. Carson, and concluded to try him first. She could not well make the journey, so she wrote him her condition. He sent what he called a month's home treatment It consisted of 28 pieces of paper like the one inclosed. The instructions were to keep them wrapped in cloth, away from light, until used, and they must not be handled or touched except by the patient. One piece was to be placed between the shoulders each night on retiring, and to be removed in the morning, and burned. I told her she had been doctoring with a lot of humbugs, and to prove it I got out GLEANINGS, that she might read your exposures of Electropoise and Oxydonor. You can imagine how she felt when she found where her hard-earned money had gone. She gave me one of the pieces of vitalized tissue paper to send you. It has not been used; so if it ever contained any healing properties it must retain them yet. I can not help feeling that he belongs to the humbug class. If not, may the Lord prosper him in his wonderful work.

Helix, Cal., Mar. 14. J. B. RATCLIFFE.

You will notice in the above kind letter the writer seems to think it *may* be possible, judging from the concluding sentence, that this man has, after all, some means or power at his command, of giving some sort of virtue to a simple piece of tissue paper, so that it can be sent by mail, together with its medical properties, to the patient. The writer sent me a periodical, or a sort of health journal, published solely to puff this doctor's sanitarium. There was a picture of the doctor himself, and his palatial residence, where he cures people. He certainly looks as if *he* had been well fed; and the pictures of his study, reception-rooms, etc., indicate that the zero weather does not trouble him very much. He is getting rich, or is already rich, and who furnishes the money? Why, they are poor people, such as our friend describes. The lady sent for the Electropoise first; but when she was obliged to admit that it was of no use, and was on the eve of sending for *Oxydonor*, thinking it might be better, somebody advised her to send for the "vitalized" tissue paper. We do not know how much money the doctor had to have for these pieces of paper. The miracles described in the Bible are tame beside the claims of quack doctors of the present day; and the tales of the Arabian Nights are nowhere. Some of the doctors make a great parade, as you may notice in almost any paper you may pick up, of the fact that their medicines are sent absolutely *free of charge.* Some of them say loudly, "Do not send us any money; we do not want it." Ah! but they get it sooner or later, as you may easily find out by biting at their bait.

Now, is it the rich people who are making these doctors so wealthy? Is it the millionaires who contribute to help pay for advertisements costing hundreds of dollars that read, "Let us send you three large-sized bottles of our medicine absolutely free of charge?" No, it is *not* the rich people. It is the poor hard-working people of our land — men who toil day by day out on farms, and whose families are often in want — women who spend their lives, or a great part of them, over the wash-tub.

The mania for medicines to make people feel better is positively alarming. Not a week ago one of our customers, in a confidential letter, said his wife was employing *four* different doctors, and taking medicines *nine times a day;* and the consequence was, it took about all the money he could rake and scrape to pay the bills. Now, this is not an isolated case. Our periodicals — agricultural, scientific, and religious — would not be filled with glaring and preposterous advertisements unless there were money in it. One of the best periodicals that comes into my home, and a paper well up with the times, keeps an advertisement running, of glass casters to put under the legs of your bedstead, to prevent the electricity from running away while you are asleep. These glass casters are, of course, sent free of charge, on thirty days' trial. If you do not "feel better" after using them you may send them back, paying postage both ways. If you do feel better, the price is $2.00. Very likely *somebody* will put in right here, "Mr. Root, we have been using those glass casters several months, and we would sooner part with the clock or the cook-stove than with them." Then somebody will say, "Why, Bro. Root, how do you *know* that they do not do good? How does it come that you are so much wiser than the rest of us?" My dear friend, I do not claim to be wiser in all matters; but I have kept up with the inventions and improvements in electricity for about fifty years. Glass casters would not keep the electricity in the human body any more than they would keep the rain from falling on the roof of your house. Of course, it might be managed by an electrician so as to insulate your bed, and then the bed *might be* charged with electricity. But even if you went to all that trouble and expense it would do no more good than it would to keep the water from falling on your roof. Any student of natural philosophy, even if he is not more than ten years old, should be able to tell you this

Years ago a man came to me and commenced something in this way: "Mr. Root, you claim that there is a queen-bee in every hive." I told him I did not claim it, but that I knew it just as well as I knew my own horse was in my own barn. But he went on: "But if you will just listen to me a minute I think I can show you the thing is impossible."

I did not listen at all. I simply went to a hive and showed him the queen; and then he went away thinking, perhaps, I *knew* what I was talking about, after all.

The *greater part* of my readers, I am sure, are satisfied the pieces of tissue paper the doctor sent had neither sense nor science about them. It is all quackery and shameful hypocrisy; the same with Electropoise, the same with T. J. Shelton, who cures you of your troubles as soon as he has read your letter describing your symptoms. And yet all of these people have hosts of followers. I wonder that this whole business of "holding people up" on the street and demanding their money is not at an end. The highwayman's occupation should be wound up, for he can get more money, and do it far easier, by proclaiming himself a "Mental Science" healer, or something of that sort.

There is a great fact staring us in the face; in fact, it ought to stare *everybody* in the face who will read the advertising pages of the periodicals that fill our home papers. The fact is this: People *imagine* they are cured by Electropoise, tissue paper, or even by writing a letter to a low-lived swindler who does not furnish any thing whatever. They are *sure* they have been cured. They have such faith in the oily-tongued venders they give him money out of "gratitude" — at least I have heard they do sometimes. Now, if these people get well without taking *any medicine at all*, is it not probably true that thousands of people are buying medicines, investing their money and their faith, when, if the truth were known, the medicine has nothing whatever to do with the recovery? I am reading the advertisements in every paper I get hold of, and we have a great pile of exchanges, I assure you. I am reading, because I am feeling anxious about our American people. We have all sorts of organizations and schools. I do not know but there are a few whose office it is to teach people better, and to correct the superstition that seems so widespread in regard to the matter of remedies. Our school-teachers, I am sure, are competent to correct these foolish notions. Our family physicians are, as a rule, well aware of what I say. When I appeal to them they laugh about it, and say people prefer to listen to quacks, and send money in response to advertisements, rather than consult their next-door neighbor, who may be a doctor; and finally our ministers of the gospel — God's appointed servants to lead men from earth to heaven—*ought* to be able to advise wisely in regard to remedies. Some of them are doing this; but when I see the Electropoise people flaunting it before the world that they have testimonials from "*a hundred ministers of the gospel*," then I feel like groaning in discouragement.

In the letter from the friend who did not want to sign his name he tells us he used to be a "Baptist;" but after he got "healed" he dropped the church and his religion, and (he tells me further) lost his faith in God. Now, this would be to *me* one test of the genuineness of any of these new things. When the tendency is to lead people away from the church and from the Bible, the thing is surely of the Devil. In our opening text it says that great signs and wonders shall be shown. I am beginning to think that Satan is perhaps granted a little liberty in this direction, that he may by this means win people from godli-

ness and righteousness and *temperance*. Why, dear friends, just think of it. Suppose a physician who treated you and won your gratitude by giving you relief from pain should say there was a good deal of prejudice against whisky. Suppose he should add, "I get drunk when I feel like it; I thank God for whisky; it has been my true and faithful friend for twenty years." If you had faith in him you would begin to try a little whisky yourself; and I hardly need add you would stop going to church, and quit reading your Bible. Let me ask our nameless friend who wrote me that kind letter how he reconciles the above expressions from T. J. Shelton — expressions that are right out in open print — with the kind words he has been saying about him; and yet this Shelton has been working hard to make it appear he is a good man. Why, what are we coming to when the prince of darkness walks right out in broad daylight, and tries to make it appear that he is spreading the gospel of Jesus Christ?

I do not find Electropoise or Oxydonor advertised *now* in any religious periodical. We find it, however, right along in many of our popular magazines. When I undertake to remonstrate with these magazines, the editors or the managers of the advertising departments seem astonished. If they do not say so in word they do in action, "Why, these men pay spot cash for their advertising space. Why should we reject their advertising, or why are we under any obligation to inquire whether the machine is scientific or not?" We have, however, quite a number of periodicals that refuse to receive medical advertisements of any kind. Furthermore, quite a few absolutely refuse to receive any advertisement if they have any reason to think there is any thing wrong or injurious about it in any shape or manner. Quite often my friends say to me, "Mr. Root, why do you concern yourself so much about these things? If people wish to be humbugged and swindled they will be in spite of you." But I tell you I can not be quiet, or rest easy, while this craze for robbing sick people continues to go on and flourish. If there is anybody in the world who should have careful, considerate, and honest treatment, it is the sick and suffering. If these land pirates wish to rob people who are strong and well, and have the money to spare, all right — let them go on. It makes my blood boil to see these swindles pushed among people who have been unfortunate, and who, perhaps, through the force of circumstances, have been kept in ignorance of the wiles and schemes of unprincipled men. Just a few days ago something that looked like a catalog was placed among our mail, addressed to Huber Root, our fifteen-year-old boy. He is a great reader, but his father almost always knows *what* the boy reads. This pamphlet was marked on the wrapper, "X-Rays." As Huber is reading every thing on electricity, I thought it was probably something relating to some new apparatus; but notwithstanding, I concluded I would slip it out of the wrapper. What do you think I found under that innocent-looking guise, X-Rays? Why, it was one of the vilest medical advertisements that I ever got hold of. I am going to put in a plea to have the department exclude it from the mails. It was about as bad a thing as I can imagine, and yet they called themselves "great doctors," and tried to make it appear they were *protecting* the young. Now, these villains are getting the names of schoolboys, and mailing them these pamphlets. Dear parents, are *you* in the habit of looking after what is sent to your children through the mails? and have your children been so brought up that they are willing (and glad) to have papa or mamma either look over the books and papers they read? Our prisons, our infirmaries, our lunatic and idiotic asylums, are *already* sufficiently populous. If you wish to make sure that no inmate of your own home shall ever get into these places, look after this matter. Look out for the medicine-venders, and be sure you are not deceived by some *wolf* that manages to get into your homes under the guise of *sheep's clothing*.

REPORT OF THE OHIO EXPERIMENT STATION ON NEW VARIETIES OF POTATOES DURING 1898.

We take the following from a recent bulletin:

In 1897 the yield was uncommonly good, because both the weather and the soil were favorable, while in 1898 the conditions were quite the opposite, and in consequence the crop was only about one-third that of the previous year, and in some cases the difference was still greater.

Bovee.—One of the best early white sorts that have been grown here for three years or more. The yield in 1897 was 350 bushels per acre, and the average for the two seasons was 236 bushels Its record has been good in previous seasons. It is about as early as Early Ohio, and far more prolific.

Early Trumbull.—An excellent early white variety, which has been on trial two seasons. It has the distinction of standing first in point of yield of any early variety, and falls but little below the best of the late sorts, on an average for two seasons. In 1897 the yield was 462 bushels per acre, and the average for two years was 293 bushels. It is fairly a rival of Bovee.

Enormous.—This ranks first in prolificacy of all varieties tested in the last two years. In 1897 the yield was at the rate of 508 bushels per acre, and the average for two seasons was 319 bushels. The tubers are white, of medium length, and not inclined to grow prongy. Season medium to late.

The same bulletin says further:

SEED POTATOES; WHERE TO GET THEM, HOW TO CARE FOR THEM UNTIL PLANTING-TIME, AND WHEN TO PLANT.

The importance of good, sound, unsprouted potatoes for seed is a matter concerning which there is no difference of opinion; but how to secure such seed is a question upon which all are not agreed.

Some would send north each year for new stock, while others believe that the southern second-crop potatoes are superior to other seed, because of the fact that they do not sprout so quickly in the spring.

It is sufficient to say, without going into details, that the Ohio Experiment Station has found that the locality where the seed was grown is a matter of less importance than the manner in which the seed is kept, which is equivalent to saying that the condition of the seed before planting determines what the crop is to be, far more than does the latitude where the seed was

produced. When equally well preserved from sprouting, our own seed potatoes have given as good results as those from either north or south. Cold-storage Ohio seed potatoes have given as good crops as those from Maine or North Carolina.

Cold storage is not convenient for all, however, and means must be adopted to obviate the necessity of it. The easiest plan is to grow seed potatoes late in the season by planting about the first of July.

To carry out this plan, preparations need to be begun as early as the first of May. Ordinarily, potatoes will not keep in condition for planting until the first of July; but if they are taken from the cellar before they have begun to sprout, or when the sprouts are just starting, and spread out on the barn floor, or loft, or some place where they will receive a little light, they will throw out short, stubby, green sprouts, about half an inch in length, and then remain in that condition for months.

The potatoes must be only one layer deep, and, preferably, seed end up. All of the eyes will not throw out sprouts; and in cutting, the pieces should be larger than for spring planting.

When planted, these potatoes will come up quickly and make their growth in a short time, and almost surely give a good crop.

In 1897 the Bovee gave, with the treatment above described, at the Station, 200 bushels per acre, and in 1898 the Enormous yielded 300 bushels per acre, which was better than the early crop. Late varieties do as well by this method of treatment as early sorts; but usually the yield is less than from early planting.

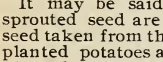
The object of this method of growing potatoes is to secure seed that will keep in a common cellar without sprouting, and for this purpose it is far superior to seed grown in the ordinary manner.

It may be said, also, that potatoes grown from sprouted seed are less scabby than those grown from seed taken from the cellar and planted at once. Late-planted potatoes are less liable to blight than early-planted, although not exempt from that disease.

Permit me to add that all the points made above agree exactly with my own experience and experiments. And now, friends, if our station, which is located on rather poor clay soil, can make such yields as those mentioned above, what in the world is the reason you and I can not do the same if we avail ourselves of information that is ours if we just reach out and take hold of it?

COW PEAS; HOW TO MAKE A STACK SO THE PEAS WILL CURE AND KEEP SAFELY.

I wish to add something to what Abbott L. Swinson says on page 240 in regard to making hay from cow peas. The speckled (or Whippoorwill) variety has the peculiarity of maturing most of its pods before the leaves begin to drop, and then it has a more erect habit; hence its great popularity for making hay. The curing is best done in open stacks made around poles set in the ground, and prepared thus: Get a piece of scantling 16 or 18 ft. long and 3x3 to 4x4. Cut some pieces from stuff 3x1, and from 18 to 24 in. long, in this shape—that is, sawn across at an angle. Now nail these pieces on the pole about a foot apart from the ground, going round in a spiral, and having the outer ends higher than the center. If the vines be stacked around these, either when just cut or afterward, they will dry out, and at the same time be well protected from rain.



Paris, Tenn. W. H. Greer.

As I understand it, the vines are to be hung on these projecting sharp points in such a way that the roots are up and the tops hang down. In this way the leaves will naturally assume the best shape to shed rain, and the pole and the projecting sticks will let air enough through the stack so there is no danger of heating. It strikes me that such an apparatus would be an excellent thing to stack common beans when grown for seed, especially when we have damp rainy weather making it difficult to dry them properly to thrash.

I am very glad to see the cow pea get a fair share of attention in Gleanings. I don't think it could properly be discussed among the bee and honey interests, but in the department devoted to *home* interests I think it is very appropriate. The cow peas were one of the great factors in enabling me to have a home. Some years ago I came by some land that was considered worthless, and it was so unproductive that it was abandoned. Ordinary grain and grass absolutely refused to grow on it, and the only plant I could start on it was the cow pea. After considerable work I prepared a shallow seed bed and applied a little dissolved S. C. rock and muriate of potash, about 200 lbs. of the former and 25 lbs. of the latter to the acre at a cost of $1.50 per acre, not including the labor. A large mass of vegetation developed on that field, all of which I turned under and started that soil on a career of usefulness from which I have annually taken a crop ever since, and paaying crops too, as, for example, two years ago 320 bushels of wheat from the 11 acres, and last year about 28 tons of the finest clover hay, red and alsike mixed, from the same field. Only after seeing what the cow pea will do for our worn or apparently worn-out soil can we begin to appreciate its value.

As a soiling crop, as a silage crop, as a hay crop, it is grand; but as a soil-renovating crop it stands second to but one, and has the advantage of being able to thrive on such barren soil where its peer, red clover, can not grow.

If any of the readers of Gleanings have light worn-out soil that will not take kindly to clover, and fail to produce profitable crops, feed it one good crop of cow peas, stimulate lightly with potash and phosphoric acid, and, my word for it, you will be astonished at the future results. Don't be afraid of being too far north, as the cow pea will grow during the warm season, but may not ripen seed. It will not thrive on wet, cold, undrained soil. L. W. Lighty.

East Berlin, Pa.

ENGLISH RAPE AS A HONEY-PLANT.

What do you know about English rape for bee forage? I came across some on my second trip to Michigan last fall, that was showing well. I called on Dr. L. N. Higbee, near Elsie, an intelligent bee-keeper having about 60 colonies of bees. He had about ½ acre in bloom; and although the weather was quite cool the bees were pouring in from it in a way that reminded me of the basswood flow earlier in the season. They were bringing in mostly pollen, which was an unusual sight so late in the season (October). Dr. H. reported a flow of honey in August, a few years ago, from 4 acres, that to me was almost past belief.

East Townsend, O. H. R. Boardman.

We are glad to get a favorable report from rape as a honey-plant, once more. Some years ago there was considerable of a stir about it. Some very large yields were reported, especially in localities where the seed was largely grown for oil. The seed was advertised in the bee-journals, and, in fact, we have it in our seed list (*English* rape is worth 20 cts. per pound) among the honey-plants. There seem to be several varieties, and one kind that would winter over in mild climates This latter was used largely for feed, and within a few years past the Dwarf Essex rape has eclipsed every other variety as a feed for sheep. This, however, is seldom grown as a honey-plant. Of course, where it is managed for growing the seed it would yield honey; but I have not yet learned where the seed of this latter variety is grown — probably somewhere in the South. Who can tell us more about it? And, friend B., will you please tell us whether the patches you mention were grown for any other purpose than as a honey-plant? And, by the way, old friend, I am glad to know you are getting enjoyment, and something profitable also, from your wheelrides. While reading your account of them I felt a great desire to go along with you, if I knew when you are going to start out again on a ride. By the

way, why can't we have an excursion planned specially for bee-keepers who ride wheels?

SWEET CLOVER IN GERMANY.

Friend A. I.:—I send you a picture out of *Centralblatt* to show you how sweet clover grows in the German language. It was windy when the picture was taken, so the plants don't show as well as they might; but Herr Reepen says the average height of the stalks back of the man and boy is 9 ft. 10 inches, and the one stalk that Herr Wegener is holding in his hand is 10 ft. 8 in. high.

But what I wanted you more particularly to notice is the growth of the potatoes this side the man and boy. Those in the foreground, as you see, have made a poor growth, while the three rows next the sweet clover have grown most luxuriantly. And yet they were planted with the same seed and at the same time. Herr Reepen thinks the difference must come from the nitrogen gathered by the sweet clover. It seems as if there must have been some other difference, perhaps accidental, but still it may be worth while to make some experiment to see whether any thing like the same difference might be made in this country. I commend the case to your consideration.

Marengo, Ill. C. C. MILLER.

I should be exceedingly glad to submit to our readers the picture sent us. It looks to me as though the ranker and stronger growth of the potatoes close up to the sweet clover may be accounted for partly by the shade. If the soil was sandy or gravelly, the sun was likely too hot for them out in the open field; and this great mass of sweet clover would not only shade the potatoes, but if there was an abundance of rain it might also help to keep them damp longer than those standing out in the full blaze of the sun. I wish our German people would tell us through Dr. Miller, or in some other way, how much sweet clover is worth for feeding stock in the "Fatherland."

MANURIAL VALUE OF BEES, ETC.

Having kept bees for five years at my present location I have been led to notice the effect of dead bees as a benefit to vegetation. For instance, in front of my old hives, where for five seasons dead bees have accumulated, the grass grows with a luxuriance not noted anywhere else. Clean out a hive where bees have died, and dump the mass of dead bees in a spot, and note the result of increased fertility. My theory is this: My apiary adjoins the garden; and daily, during the working season, I find dead and disabled workers lying about on the ground. Now, a few bees every day dropped on the land is a small thing; yet in a few seasons it amounts to quite a large amount. Agricultural specialists agree that animal matter (decomposed) is a fine fertilizer; hence I concluded that bees in a few years are worth something to their owners as a result of the matter added to the ground from dead bees. I shall clean up several hives this season, and experiment by scattering the "corpses" in the drill along with the seed, side by side with other fertilizers, and report results.

Another thing, my chickens, when about six weeks old, eat drones, and seem to thrive on them—a "lean-meat diet," you might call it. What surprises me is the instinct that teaches young chicks to eat drones and let workers alone. They beat drone-traps badly.

Murfreesboro, Tenn. CHIP HENDERSON.

I have often thought, friend H., that there must be considerable fertility in the bees thrown out of a hive after they have died in wintering; and even if they do not die in wintering, if it is true that a worker-bee lasts only about six weeks, there is quite a lot of carcasses to go somewhere. Our plan of having a Concord grapevine to shade each hive utilizes this debris with very little labor. We have beautiful grapes by the ton year after year, with no expense except to prune the vines and tie them up once a year. They afford shade to the hives, and the bees furnish all the fertility needed.

GROWING STRAWBERRIES AND CORN TOGETHER.

I have given the subject a thorough trial, and have abandoned the system as a delusion and a snare. My first trial was exactly the same as Mr. Chapin's. Corn was planted about 3½ feet each way in hills, and one strawberry-plant set out between hills of corn in the row. The variety was Lenig's White; and the season being a good one I got a fair crop the following season. Subsequent trials proved comparative failures. I have tried growing early sweet corn between every other row of strawberries, and then again between every fourth and sixth row; and the further apart the corn was planted, the more the system condemned itself. When the strawberries had the field to themselves there was a good stand of strong vines; but always, without exception, the strawberry-rows adjoining the corn were feeble and stunted, showing that the corn had taken the larger share of plant-food and moisture. Our land being rich and high-priced (we live in the city) we have tried to get all we can out of it. I have tried beans, cabbage, beets, and onions, among my strawberries, and have now settled down to early cabbage, early beets, and onions, as being the only crops that can be grown among strawberry-plants without injury to the succeeding crop. These crops come off the ground early, and leave the moisture for the strawberry-plants in the fall, when it is most needed. Corn, on the contrary, needs all the season for maturing; and with its long feeding roots reaching out every way for plant food and water, the poor strawberry-plant has no show whatever. If our old friend A. I. Root will plant one row of strawberry-plants alongside a row of corn he will get the best object-lesson of how a strong plant can rob a weaker one.

I am entirely agreed with you as to the value of cornstalks for a mulching for strawberries; but I want them grown by themselves, not nearer than 20 feet of the strawberries. Cornstalks between the strawberry-rows, and 2 inches of clean rye straw over all, is my ideal of a perfect mulch. H. E. MCGREGOR.

Appleton, Wis.

Friend Root:—In regard to what you say in March 1st GLEANINGS about planting corn with strawberries to shade them, I most emphatically say, *don't.* Corn is such a rank grower, especially on ground good enough for strawberries, that the roots would absorb more moisture than the shade of the stalks would prement evaporating. I have tried it, and *know.*

Belleville, Ill. E. T. FLANAGAN.

THE CRAIG POTATO; A FAVORABLE REPORT FROM IT.

I like the Craig potato for late the best of any variety I have yet tried, and I have tried a good many of them. I have been able to get a fair crop of them when (because of dry weather) many other varieties failed entirely. I started with 3 lbs., and in four seasons the increase amounted to between 600 and 700 bushels, or an average increase of over 50 fold; and that too, without any fertilizers or special culture.

Mitchellville, Ia., Mar. 26. G. S. FOX.

The above is exactly the way the Craig behaves on our grounds year after year; and it is a mystery to me why so many should fail in making a success of it. I suppose we shall have to conclude that, like many other things in the vegetable kingdom, it succeeds nicely in some localities and not in others.

THE NEW SPRAY-PUMP FOR KEEPING FLIES OFF HORSES AND CATTLE.

On page 288 you ask for information regarding the use of kerosene spray on cattle, to keep off flies. Last year, seeing on sale at one of our stores the Acme atomizer, and thinking it would be handy for me to spray my hand-fertilized potatoes, I bought one and found it very convenient for that purpose. By keeping it loaded I could go over my few short rows every morning to make sure the bugs would not destroy the

buds or blossoms before the seed-balls were set. Of course, for this I used Paris green I also used the atomizer with *clear* kerosene oil for spraying cabbage, with good results. One day, noticing that the flies were tormenting my calves, I thought to try the kerosene spray on them. I found it worked charmingly, as no flies would remain on the calves to annoy them, after which we sprayed them every morning.

The men, noticing the good effect of the spray on the calves, tried it on the cows just before milking, with equally good results. I found it would last all day on the calves if one-fourth sweet or lard oil was added to the kerosene. I am using the sprayer with clear kerosene on my orchard, to kill the oyster-shell bark-lice that are now hatching. This year I shall buy an atomizer for each kind of mixture, to avoid the trouble of so many changes. They are so cheap one can afford to have all he wants. A. E. Manum.

Bristol, Vt., Apr. 5.

I used last season a sprayer something like the Faultless, but I had to blow into the tube. I put kerosene oil into it, and sprayed my cow before I commenced to milk, when flies were so troublesome. Every fly is dead instanter. I know of several who used them, and they say they are just grand for that. It takes but the least bit of oil each time. Just fill it part full, and have it handy where you milk. It will save time, possibly some strong language, and the milk-pails will be better filled. It is like oil on the troubled waters. A. A. Harrison.

McLane, Pa., Jan. 25.

My impression is, at the present writing, that the little low-priced machines are going to be more used for the above purpose than for destroying potato-bugs. Flies on domestic farm animals not only annoy the animals themselves as well as the driver, but they actually cost thousands of dollars in hard cash, sometimes resulting in accidents that end in the loss of life. If one of these cheap sprayers with a little common coal oil will do the work, thousands can afford to keep them for this purpose and nothing else, even if the application is to be made every morning before starting out. The cheap tin ones will be all right for kerosene.

THE WEATHER ALMANACS AND THE ZERO WEATHER IN FEBRUARY.

On page 195, March 1, I suggested that here was a chance for the almanac-makers to immortalize themselves, if they had any glimpse ahead of the terrible cold spell in February. There has been just a faint attempt to make out that "one of the prophets" did tell us what was coming in February. Of course, there is a good deal said about storms and blizzards; but the prediction would fit any February very well. Had the prediction been that the middle of February would be all over the United States more zero weather than had been known for years, and, in fact, that zero had gone down into the Southern States, where it was seldom if ever known before, then we might have a little faith, and so on through the rest of the winter months. If any record was made last fall to the effect that December would be unusually severe, especially during the fore part, all over the land, and that January and March would change places, and that the middle of February would be remembered for years to come, from Canada to Florida, then we might have had some reason to believe in "inspiration" in regard to the weather. The severe period in February was somewhere from the 8th to the 16th. Below is a clipping from the most popular weather almanac concerning this period:

A marked storm period runs from the 8th to the 12th, in which a Venus equinox will be at the center of its power. Very warm days will be followed by rain and thunder, turning to snow, blizzards, and a cold wave. About the 14th to 16th, cold will moderate, and more storms of rain and snow will occur, followed again by change to much colder.

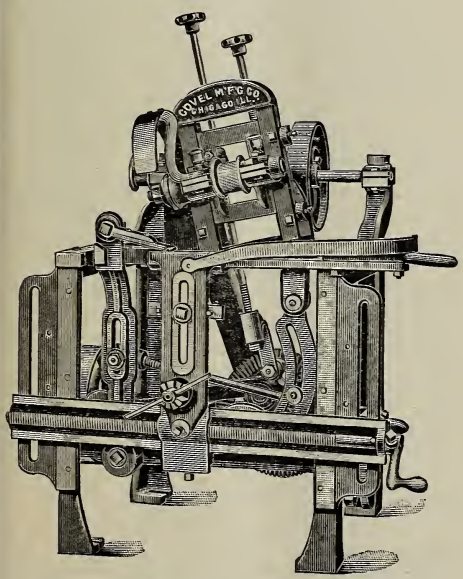
Now, wouldn't the above fit very well for almost any February? and does it hit at all what actually occurred all over the United States last February? The closing prediction for the month is, "Watch your stock; many will perish;" and because many did perish, we are called upon to note the wonderful accuracy, etc. But this same thing has been said in regard to stock for every February and March for years past; and it is not *at all* wonderful that it came true every time.

SHARPENING SAWS BY MACHINERY; THE INERTIA OF HUMANITY.

Every progressive man and woman has felt that peculiar pain that comes to one who is trying to help people who will not be helped. We find this not only in spiritual and moral things, but all through life, and even into the mechanical world. More than 20 years ago I was fully satisfied that sharpening saws by hand was a clumsy and wasteful way of doing the work. It was when I first began to make bee-hives; and circular saws sharpened *just right* were beginning to be much in demand. I got an emery wheel made specially for the work, and rigged up a machine of wood, and this machine sharpened the saw without the use of any file whatever, so that it did prettier work, and did the cutting with less power than any saw I had ever before used. The reason was, the teeth were exactly alike, and ground at just the right angle, with the right amount of "throat" to let the dust out, etc. I got my ideas of how it should be done from Disston's book on saw-filing. My machine was crude, and soon got out of adjustment; and after I had spent considerable time I decided that a *better* machine was needed, made all of metal.

Soon afterward, at the Centennial Exposition, at Philadelphia, I saw a machine made for that very purpose; so you see my first experiments in this line were about 23 years ago. Some time afterward we purchased one of these machines, but it did not work satisfactorily. The inventors explained that they had gotten out a better one, and we swapped, paying the difference. But all these machines seemed to have defects. I sometimes thought *I* could make any of them work, because my heart was in it; but different men in our saw-filing department sooner or later dropped the machine, and went back to hand work. In spite of all I could say or do (or at least it seemed so to me) our men would always persist in cutting down the outside (or top) of the saw-tooth, instead of doing their filing on the *under* side. If the regular saw-filer was sick or away, the new man was sure to file down the points of the teeth the first thing he did. Now, the *point* of the tooth is what does the work. If it needs to be made sharper, cut away the steel on the under side, but *never*

on top. The people I talked to assented to the theory; but the first time I came along they were bearing down right on the top of the tooth again, and cutting away the point, wasting the saw, wasting their strength, and not having a good cutting tooth when they were done. Well, to day my heart has been made happy by seeing a saw sharpened on a new machine, without the aid of any file at all, and the saw cuts just as nicely as the one I worked with *23 years ago*, sharpened on my home-made wooden machine. Saws sharpened by machinery have their teeth exactly alike; and if you once set the machine so it makes one tooth of the proper shape and pitch, all the other teeth will be just like it, and you can sharpen a hundred or a thousand, and have each and every one cut just as well as the first one This new automatic machine cost us about $75, and was made by the Covell Mfg. Co., Chicago. I have always maintained, and still maintain, that, even if one insists on filing saws by hand, he needs a machine to do the gumming and truing-up. Just take a look at a lot of saws that have been sharpened with files a dozen times or more, and then compare them with one that has been through the machine. But even now I am afraid that, in a few days, I shall hear somebody say the machine is "no good," and hear that they have gone back to bungling hand work.



AUTOMATIC MACHINE FOR FILING SMALL CIRCULAR SAWS.

The same apparatus, with a little modification, trues up and sharpens band-saws in the same way; and as it is a considerable task to sharpen a long band-saw, such a machine is a wonderful saver of hand work. We now have two of these machines in operation. One saw-filer can superintend both of them, and be doing other work besides. The band-saw will, in fact, take care of itself for almost an hour at a time, and do nicer work than any man ever did by hand with the file—at least that is my opinion. A one-horse-power electric motor operates both machines.

Our Roll of Honor.

Dear Brother Root:—I notice, in looking over the Honor Roll, that you give a place to those who have taken GLEANINGS since 1880 and thereabouts. When the Honor Roll was first started, I did not consider that those subscribing for so short a time would be counted among the veterans. But if they are, I feel that I am entitled to a place, having been a subscriber since 1879. I might say that I have all the copies since that date in my possession now. I have written you from time to time telling you of the help GLEANINGS has been to me. It would be hard to estimate how much benefit I have derived from your advice and counsel in the Home Papers. We had the pleasure of a visit from you at our home a short time ago, and we hope that you will come to Toronto soon again, when we shall be much pleased to have you stay with us.

I have been much interested in your travels, and intend sending you a sketch of a trip we had to Muskoka last summer. We know from what you have said in your talks about health, soft water, etc., that Muskoka would be just the place for you. We believe you would enjoy it and that it would do you good. We traveled about two hundred miles on our bicycles, and about the same distance by canoe up the lakes and rivers, camping out all the time. We had plenty of fresh fish, backberries, raspberries, huckleberries, and the very best pure soft water. We were away a month, and the total cost for three of us did not exceed $50.00 EDWIN GRAINGER.

Toronto, March 13, 1899.

To be sure, I should enjoy it, friend G.; and whenever you get ready for another trip of that kind, just send me word and I will try hard to be one of the crowd. Well do I remember my pleasant but altogether too brief visit at your place. I was on the beefsteak diet then; but, may the Lord be praised, I think I could eat berries and fruit now with almost any of you.

My dear old Friend:—Please have my subscription extended. That's because I began with Vol. I. No. 1 of GLEANINGS. I think it began not so very long after the first visit I made to you. That was not long after you had had a fire, in 1870, and had your jeweler shop and dwelling all under one roof. Other company was there, somewhat crowding the sleeping facilities; you and I slept together, and you kept me awake detailing a plan that was in your head for putting a hive under each hard-maple tree, tapping the tree, and having the sap run directly into the hive for the benefit of the bees. You didn't manufacture smokers then, and I showed you how to smoke bees with a pan of hot coals. You liked the plan, and as soon as I was out of sight you tried it and burned up a hive, or tried to. I think I've slept with you a number of times since, and was distinctly the gainer on at least two separate occasions, when you absent-mindedly put your nightcap in my overcoat pocket instead of your own. I never lost any thing by sleeping with you. I always put my Waterbury under my pillow. Please don't forget to have my subscription extended.

Marengo, Ill., March 23. C. C. MILLER.

I have been a continuous subscriber to GLEANINGS for about 20 years. I have preserved all of the volumes, but have not taken time to look up just what year my time began. I became interested in bees about 1879. My bees have wintered fairly well up to this time on their summer stands. JOHN S. SNEARLY.

Williamsville, N. Y., March 20.

I commenced taking GLEANINGS in the 70's, and have continually perused its contents ever since with interest, pleasure, and profit; and I know I am a better Christian to-day, and love the Bible better for the truths taught and practiced in GLEANINGS. Hoping we shall meet in the city of gold, I am your brother,

DuQuoin, Ill., March 9. F. H. KENNEDY.